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ABSTRACT

A study was conducted in fall 1981 and spring 1982 to determine whether participation in selected components of Sierra College's (California) comprehensive student development program had a positive effect on student retention among first-time day students. The study focused on individualized counseling-advising appointments; personal development courses focusing on personal, vocational, and educational planning; and skill development courses aimed at overcoming deficiencies in reading, arithmetic, spelling, and other skills. The study population included 1,760 day students with and without reading test scores (including 1,107 with reading scores) and 1,111 of the original 1,760 who returned for spring 1982. The students were divided into eight groups based upon the kinds and combinations of activities in which they participated. Study findings included the following: (1) the total withdrawal rate for the first semester was 37%; (2) 65% of those withdrawing failed to complete a single class; (3) dropout students were more likely to be over 30 years of age; (4) dropouts tended to attempt and complete fewer courses, had only slightly lower retention rates and grade point averages, and were likely to be either Hispanic or Caucasian; (5) those who dropped out were less likely to have attended orientation or seen a counselor; (6) skills development had less of an impact on retention than no treatment at all; (7) counseling-advising was effective in increasing retention; and (8) positive relationships were found between personal development courses and retention rates. The college's application for admission is appended. (LAL)

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SIERRA JOINT COMMUNITY COLLEGE DISTRICT

THE RELATIONSHIP BETWEEN STUDENT PARTICIPATION IN STUDENT DEVELOPMENT ACTIVITIES AND RATE OF RETENTION IN A RURAL COMMUNITY COLLEGE

Dr. Gerald C. Angove
President and
District Superintendent

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May, 1984

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CHAPTER I

THE PROBLEM

Statement of the Problem

Student development programs are composed of a number of diverse specialized activities intended to facilitate growth of the whole student. A major aim of such programs is to provide professional assistance to students to help them successfully persevere and complete their stated goals.

Evidence shows that the individual activities of a comprehensive student development program do, in fact, increase student retention.[1] and [2] However, there is little empirical research available to indicate the combined effect of these interactive student development activities on retention rates during the first year of college, the time of highest attrition.[3] This is particularly true for community colleges.

Sierra College knows little about its attrition rate and has not determined if its student development program has a positive relationship to student retention. Without such fundamental knowledge as reference points, evaluation of existing student service activities or desired modifications of programs, the decisions about meeting student needs through assessment, placement, advising, and other pertinent concerns related to student retention are rendered less effective for lack of adequate information.

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[1] Oscar T. Lenning, Ken Sauer, and Philip E. Beal, Student Retention Strategies, AAHE-ERIC/Higher Education Research Report No. 8 (1980):17.

[2] Philip E. Beal and Lee Noel, What Works in Student Retention (Iowa City, Iowa, and Boulder, Colo.: American College Testing Program (ACT) and National Center for Higher Education Management Systems, 1980), p. 3.

[3] Alexander W. Astin, Preventing Students from Dropping Out (San Francisco: Jossey-Bass, 1975), p. ix.

Purpose of the Study

The purpose of this study was to determine whether participation in selected constituent activities of a comprehensive student development program by first-time, day students at Sierra College, a rural community college in northern California, had a positive, reinforcing, and significant relationship to student retention. The students were studied over the Fall, 1981, and Spring, 1982, semesters. The selected activities were: a) individualized counseling-advising (CA) appointments; b) personal development (PD) courses focusing on personal, vocational, and educational planning and development; and c) skill development (SD) courses aimed at overcoming deficiencies in reading, arithmetic, spelling, and other skills necessary for college success.

Background and Need for the Study

Student service programs emanated from the university system to meet student needs in adjusting to the university. As a consequence of the diverse student needs, new and varied groups of student service specialists came into being. A student services profession expanded in diversity and size. At the same time, these professionals were aware that budget reductions would have a negative and immediate impact on their costly programs. Programs which are not always directly revenue producing are often expendable; but, as in other areas of university education, a thorough investigation of student services has not been made and remains unsubstantiated regarding cost effectiveness.

Student service programs in California community colleges have been called upon to meet the multi-faceted needs of an ever increasing and diverse student body. This diversity is due, in large part, to the national trend of "college for all," an egalitarian, unrestricted access philosophy which has produced a mission of open enrollment with an expectation of meeting the needs of all those admitted. The role of student service programs to assist in meeting these needs is made more difficult when community college admissions criteria make it easier to get into college than into some classes. A growing number of students without requisite skills or adequate preparation for the rigors of coursework are being admitted to community colleges. The responsibility for closing this gap between relaxed admission policies and course requirements usually falls upon the staff and activities of student services. Without adequate resources and support, the expectations of meeting the needs of these high-risk students cannot be satisfactorily met.

Passage of California's Proposition 13 (1978) combined with state revenue shortages, have resulted in less money for California community colleges. Limited resources have already resulted in program and staff reductions and jeopardizes the continued existence of student development delivery systems,[1] which are not always seen as a high priority directly related to, or supportive of, the instructional program or as revenue producing. If it can be shown that student services are related to increased retention, then a case can be made for their cost effectiveness and value in reducing attrition, culminating in continued or increased institutional support. This study was needed to determine if a positive relationship existed between selected activities of a comprehensive student development program and student retention.

Theoretical Foundations of the Problem

No single theory can adequately account for the complexity of human behavior. Student development concerns itself with development of the whole person interacting with the environment. Student development programs are intended to promote growth and assist the student to cope independently with reality in a responsible manner while determining and pursuing personal goals and objectives.

It is suggested by Astin[2] and Beal and Noel[3] that the interactionist theory defining the relationship between student and college and the degree of congruence or fit, may best explain the phenomena of retention. Interaction produces a series of relationships or fits. The quality of these interfacings depends upon the success of meeting the developmental needs and interests of students. It is hypothesized that the interaction between student and institution best accounts for the variance in student retention. In Delworth and Hanson's review of over a dozen theorists, it is the work of George Stern and Lawrence Pervin that best describes the behavioral dynamics of retention.[1]

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[1] Kay Ragan, A Summary Report of the California Community Colleges Money and Personnel Resources in Student Services (Mt. San Antonio College and California Personnel and Guidance Assn., Walnut, California, 1981), pp. i-iii.

[2] Alexander W. Astin, Preventing Students from Dropping Out (San Francisco: Jossey-Bass, 1975), p. 175.

[3] Philip E. Beal and Lee Noel, What Works in Student Retention (Iowa City, Iowa and Boulder, Colo: American College Testing Program [ACT] and National Center for Higher Education Management Systems [NCHEMS], 1980), p. 5.

Stern states the environmental press (environment) interacts with personal needs (person) to influence action (behavior). He hypothesizes behavior (B) is a function (f) of the person (P) interacting with the environment (E), or B=f(PxE).[2] He suggests there is an element of congruence-dissonance in every person-environment (PE) relationship. Congruence is the level of compatability between need and environment which produces fulfillment.

If congruence exists, the behavior manifested induces a feeling of personal success, allowing students to perpetuate and remain within the environment. Dissonance, a poor fit between the person and environment, produces stress and discomfort, and may manifest itself as withdrawal from the field (dropping out) or act as a growth inhibitor.

Festinger's[3] theory of cognitive dissonance, "non-fitting relations" among perceived elements of self-environment interactions, added another dimension to interaction theory. By elaborating on the fit between the student's knowledge and perceptions about self (needs, talents, interests, intelligence, goals, etc.), environment (courses, instructors, peers, policies, regulations, relationships with others, parental expectations, etc.), and position in the environment (personal difficulties, academic problems, uncertainty, etc.), he showed that reducing individual discrepancies between self and college increases the student's chances of remaining in college.

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[1] Ursula Delworth, Gary R. Hanson, and Associates, Student Services: A Handbook for the Profession (San Francisco: Jossey-Bass, Inc. 1980), p. 118.

[2] George G. Stern, "B=f(PxE)", Journal of Personality Assessment 28 (1964), pp. 161-168.

[3] Leon Festinger, A Theory of Cognitive Dissonance (Stanford: Stanford University Press, 1963), p. 27.

Pervin's theory elaborates upon that of Festinger. It emphasizes that an individual's perceptions are related to actual and ideal self concepts. Discrepancies between the two are unpleasant and can be psychologically painful. He contends people are attracted to those things that enhance their ideal self and avoid those that do not.

The dimensions of interactions and transactions are central to Pervin's theory. Interactions are the interconnections of multiple factors acting upon one another. The individual relating to factors within the environment are transactions.[1] He concludes that behavior is an interaction of objects in a causal relationship, acting upon one another in a complete system with individuals striving to find their unique fit in the enviornment. The greater the fit, the greater the performance and satisfaction, and therefore, the greater the growth. Discrepancies or cognitive dissonance between perceived, actual, and ideal self is unpleasant and painful. Individuals will move away from or avoid those situations that are at variance with the ideal self.

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[1] Lawrence A. Pervin, "Performance and Satisfaction as a Function of Individual-Environment Fit," Psychological Bulletin 69 (November 1968), pp. 56-58.

Drawing from Festinger's theory on dissonance, Pervin, Beal and Noel, Delworth and Hanson, and Stern emphasize the importance of the interaction of the student with the college environment. The greater the degree of fit or congruence between the two, the greater the sense of success and belonging. Such satisfaction leads to continued productivity, achievement, personal growth, heightened performance, and increased retention. Through intervention strategies intended to improve student success, retention can be increased. This is equally true in the area of instruction.

Tinto and Cullen's[1] analysis of recent retention research led them to theorize that the dropout phenomena is basically an interactive process between the individual and the institution. They base their theory on Durkheim's theory of suicide that postulates breaking one's ties with a social system stems largely from lack of integration into common life of the social system. They extend their theory to state that dropping out of college is a multidimensional process resulting from a poor interactive-integrative process between the student and institution.

Patricia Cross[2] suggests that students now entering colleges are quite different from those in the past. They have lower ability test scores and have not been academically successful. She maintains higher education is not prepared to meet the needs of these students. These students display different styles of learning that must be appropriately matched to course content and teaching techniques to insure more effective learning. She defines the four styles of learning and matches these with the institution's learning resources.[1] This action approach to learning increases the "fit" between the student and the classroom. The proposal serves as an excellent application of theory as set forth by Pervin, Stern, and Tinto.

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[1] Vincent Tinto, Dropout in Higher Education: A Review and Theoretical Synthesis of Recent Research, (New York: Teachers College, Columbia University, 1973), Ch. 4, p. 62.

[2] K. Patricia Cross, Beyond the Open Door: New Students to Higher Education (San Francisco: Jossey-Bass, 1971), pp. xii, 13-16.

Students perceiving a high degree of congruence between self and environment are apt to pursue and preserve surroundings which enhance the sense of self-worth. Policies, procedures, programs, people, and attitudes committed to enhancing the quality of interactions lead ultimately to feelings of success and growth and are maintained. It is within the framework of this concept that increased retention takes place.

Interaction theory accounts for the student's relationship to the college environment and can best describe the complex and comprehensive elements of behavior. The student development staff, activities, and programs are the prime interacting or change agents between the two. The staff works towards maximizing the "fit;" and therefore the concern for the quality of experience and success remains constant.

Current student retention research indicates that the comprehensiveness of student development programs and the fit between the student and the college appear to have the greatest potential for producing the greatest gains in student retention.[1] Counseling is the most effective service because it is not narrowly focused on a singular activity like a reading or arithmetic skills course. Personal development courses hold greater promise for "adaptive" adjustments on the part of students over a longer period of time. The length of time required to witness basic personality and behavioral changes brought about by personal development courses would normally escape the investigation of students over a period of one or two semesters. Students seeking counseling-advising may represent a more academically able and better adjusted clientele. Counseling-advising provides an immediate placement by a professional counselor enhancing the interfacing between the student and institution. Through counselor intervention, better fit is created between the student and institution.

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[1] K. P. Cross, Accent on Learning: Improving Instruction and Reshaping the Curriculum (San Francisco: Jossey-Bass, 1976), pp. 112-133.

Applied Theory

Community college student development programs are built upon the premise that there are very diverse needs to be met. The immediate aim of these programs is to gain skill or achievement level information from standardized tests and data on past academic performance for each student. The student's academic record is then coupled with these scores to form a basis for counseling, course placement, and vocational-educational advisement.

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[1] Philip E. Beal and Lee Noel, What Works in Student Retention (Iowa City, Iowa and Boulder, Colo: American College Testing Program [ACT] and National Center for Higher Education Management Systems [NCHEMS], 1980), p. 5.

Counseling-advising (CA) individually assesses student interests, aptitudes, values and goals. Once clarified, students are placed in personal development (PD) courses which are small group learning situations that work towards individual objectives. The majority (60%) of the students require this type of assistance to establish or clarify vocational-educational goals. This process begins at orientation and may require placement in skill development (SD) courses, designed to improve reading, writing, arithmetic, and related skills necessary for academic progress and improved success. With this 60 percent of the student body requiring such assistance, these courses are easily justified.

Summary

As suggested in this study, retention becomes a function of student-institutional fit. Without the intervention of student development activities and personnel to optimize that fit, an open door policy, inadequate student assessment, or nonrestrictive admission criteria will most assuredly lead to uncalled for attrition.

An improved fit between the person and the environment leads to positive reinforcement and increased retention--the greater the fit, the longer the stay. Without an interacting agent (activity or person), the student would be left to choose courses and related activities by trial and error and with limited information. Such an approach is inadvisable, since the student rarely has the necessary information about self, careers or courses to make the most informed, objective decisions--decisions that can have lifelong impacts.

Research Questions

This research sought to determine the answer to the following major research question: What was the individual and combined effect of the interactive relationships of selected student development activities to retention rates in the Fall, 1981, and Spring, 1982, semesters for first-time, day students at Sierra College, a rural community college in Northern California.

Subsidiary research questions are:

1. Did the main and/or interaction effects of participation in the selected student development activities (counseling-advising, personal and skill development courses) vary according to units completed and courses attempted?
2. What was the relationship between selected independent and control variables and retention rate?
3. Was there a point of diminishing return as a result of saturation, where increased participation resulted in little or no increase in retention rates?
4. How did students who completed, as contrasted to those students who attempted, Skills and Personal Development courses and/or participated in Counseling-Advising differ according to the number of units completed, number of courses completed, and retention rate?

Assumptions

The study was based on the following assumptions:

1. Students are motivated to achieve goals, since they have decided to enroll in college and have exercised the freedom to make choices from a wide variety of courses and activities.
2. Most students do not have the information necessary to make realistic vocational and educational decisions. In order to increase and improve the interaction of student and college, student development activities and personnel are necessary to assist students to realize their goals.
3. Decision making takes place in a milieu of complex and interacting systems. Student services programs are a significant element impacting the quality of the student's college life.
4. It is assumed all groups in the randomized block design are the same due to the matching-selection process from the pool of 1,107 students with reading scores.

Definition of Key Operational Terms

The following are operational terms for which definitions are provided for the purposes of clarity throughout this study.

Course Work (Units) Attempted (UA): The number of academic credits for which the student is registered on the fourth Monday (first census date) of an eighteen-week semester.

Course Work (Units) Completed (UC): The number of academic credits of course work completed with a passing grade

(A, B, C, D, and CR) at the end of each semester. While these symbols represent passing or retention, the quality of passing will be represented by a cumulative grade point average.

Course Work (Units) Not Completed (UNC): The number of academic units of course work ending with an incomplete (I), withdrawal or drop (W), failure (F), or no credit (NC).

Fit: The degree of congruence between two variables, e.g., college and student. "Fit" can increase retention because it is related to satisfaction, achievement, meeting aspirations (goals), successful coping behavior, a positive self-concept, little discrepancy between the perceived actual and ideal self, and better performance.

Grade Point Average: The GPA is individually determined by adding the quality points for each grade (A=4, B=3, C=2, D=1, F=0, and I=0) and dividing the sum by the number of courses attempted. The traditional multiplication of the quality points times the course unit value will not be performed. The incomplete will be treated as an "F" for analysis purposes. A "W" with other grades was not counted in the divisor when computing individual student GPAs. However, a student with all W's would have a zero GPA, and would be included in the divisor with all other students for group GPA computations. This will have an effect of depressing the overall GPA compared to traditional GPA computations. Credit (CR) and no credit (NC) grades were omitted from GPA computations because they carry no quality points.

Retention Rate (criterion or dependent variable) (RR): The ratio between the number of course units completed (UC), the difference between the number of units attempted (UA) and the number of units not completed (UNC), divided by the total number of units attempted for each of the first two semesters (fall and spring) of the 1981-82 school year. A student with all W's will have a zero RR. The formula is reported as: $RR=UA-UNC=UC \div UA$. The formula is a refined measure to capture the significance of partial as well as complete dropouts.

Selected Student Characteristics (control variables): These encompass demographic variables routinely measured on each student: 1) age; 2) sex; 3) race/ethnicity; 4) educational goal at Sierra College (transfer with or without an Associate of Arts degree, earn an Associate of Arts vocational or general education degree, earn a certificate, upgrade job skills, courses for recreation or personal enrichment, or other); 5) two- or four-year major; 6) length of time intended to complete goal (one semester or less, or more than one semester); 7) grade point average for Sierra College course work; and 8) Nelson-Denny Reading score.

Selected Student Development Activities (predictor or independent variable):

A variety of specialized professional services designed to meet the needs and levels of personal, academic, social and vocational development, including counseling, personal and skill development courses as defined on pages 73 and 74.

Student Development Index (predictor or independent variable) (SDI): The weightings (hours of participation) of each student development activity. These weightings, as listed on pages 73 and 74, served as the independent or predictor variable for each student. Students completing each activity received credit for all hours, and those who withdrew received nothing.

Student Development Program: A comprehensive amalgamation of activities whose primary purpose is to provide person-environmental interaction in response to the needs of the whole person, while accounting for individual differences.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

Early attrition research focused on why students dropped out of college. In the 1970s a more positive orientation was reflected in the emphasis on increasing retention. With a declining pool of prospective students and increasing demands for greater efficiency of institutional resources in view of declining financial support, the need for increased retention became a necessity. College retention programs called for interactive-integrative approaches which involved the total institution. Student development program modifications and research began to reflect this dramatic and significant shift.

Retention research has produced many conflicting findings focusing on easily collected demographics such as sex, age, race, test scores, and complete withdrawal from college. Too many are single variable studies, an oversimplified approach to the problem. Attrition is frequently perceived as a unitary act rather than an expression of complex behavior including factors of the student, college and home in an interactive process.

With the new focus came changes in the factors studied. Where individual student characteristics were the former points of interest, the new approach looked to institutional programs as means of keeping students in college; characteristics such as sex or ethnicity could not be altered to improve retention, but proactive programs could be designed to reduce attrition.

Concurrent with these changes in program development and research there was a shift in the theoretical premises upon which programs and research were based. A more comprehensive view of the phenomena was developed. From single aspects of a student, such as intelligence, came a broader perspective, reflective of a more realistic approach to complex behavior. Student-environment interaction became and remains the focal point of retention models and research.

Cope and Hannah[1] state that research data ignoring institutional context is limited in its generalizability from institution to institution. It is perhaps this latter observations that results are often in conflict with each other. Students leave college for complex person-institution life style reasons which are not readily captured by numbers and generalizations.

There is a paucity of research studying the overall impact of the student development program which employs an interaction framework on retention. This is especially true for community colleges. There is also little research with an interactive perspective on the first year of college attendance, the year of highest attrition.

To understand fully the significance of this study, one must understand the history, theory and related research pertaining to student characteristics, student services, institutional factors, psychological traits, and interaction theory.

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[1] Robert Cope and William Hannah, Revolving College Doors (New York: John Wiley and Sons, 1975), p. 9.

History

The first student personnel officer was appointed at Harvard in 1880. Since that time, the tremendous increase in the number of specializations intended to personalize the college environment for the student has clearly remained the central objective of student services.

In 1937, the American Council of Education (ACE) published the Student Personnel Point of View,[1] setting forth a statement of purpose and philosophy containing twenty-three specific services to be included under the student services umbrella. The document's main focus was to consider the student as a whole while not singling out the intellectual capacity.

Williamson,[2] in 1949, through ACE, added three goals of higher education to the 1937 document: 1) a consideration for democractic principles; 2) international understanding and cooperation; and 3) the application of creative thinking to social problems and public affairs.

The 1950s and 1960s witnessed a general change from student "services" to student "development." Development carried the connotation that students grow or mature in sequential stages as a consequence of their interaction with their environment. In 1975, the Council of Student Personnel Association in Higher Education

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[1] American Council on Education, The Student Personnel Point of View, American Council on Education Studies, Series 1, Vol. 1, No. 3, Washington, D.C.: American Council on Education, 1937, p. 1.

[2] American Council on Education, Committee on Student Personnel Work (E. G. Williamson, Chmn.) The Student Personnel Point of View, Rev. ed., American Council on Education Studies, Series 6, No. 13, Washington, D.C.: American Council on Education, 1949, p. 16.

(COSPA),[1] stated that human beings seek to become free and self-directed. It was part of the mission of a specialist in student development to assist the student in reaching those goals. The document also outlined four other points of view, establishing: 1) the orientation to student personnel work is developmental; 2) students are collaborators in the process of growing and learning; 3) all developmental theories must be understood; and 4) student development specialists must be proactive in order to make a positive impact on the change process.

Delworth[2] states that student services literature since 1975 has emphasized person-environment interaction. Walsh[3] concludes there is no immediate hope for a general theory for person-environment interaction, and present concepts are ahead of researchers' abilities to measure the extremely complex phenomenon. Delworth further advises:

> Before we can develop reasonable, effective interventions, we must know what manipulations of which variables produce what effects in which people with what certainty and risk.[4]

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[1] Council of Student Personnel Associations in Higher Education, Professional Development Associations in Higher Education, Professional Development Commission (G. L. Saddlemire, Chmn.), "Student Development Services in Post Secondary Education," Journal of College Student Personnel, 1975, pp. 16, 524-528.

[2] Ursula Delworth and Gary R. Hanson, Student Services: A Handbook for the Profession (San Francisco: Jossey-Bass Publishers, 1980), pp. 117-118.

[3] William B. Walsh, Theories of Person-Environment Interaction: Implications for the College Student (Iowa City, Iowa: American College Testing Program, 1973), p. 188.

[4] Ursula Delworth and Gary R. Hanson, Student Services; A Handbook for the Profession (San Francisco: Jossey-Bass Publishers, 1980), p. 118.

The nature of this study was to measure the combined and broader effects of student development activities on retention rates.

Models

The application of interaction theory to retention does not rely primarily on individual attributes, program components, or the environment. It contends behavior is a function of a holistic interaction with the student's environment. The theory maintains that individuals always remain responsible and accountable for their own behavior and decisions.

Delworth and Hanson[1] elaborate further on the student service interactionist perspective in stating that the individual's attributes interact with situational attributes to motivate and direct behavior. Behavior becomes a function of the individual interacting with the environment. The points of intersection (fit) between the student and college need to: 1) facilitate appropriate and responsible use of the environment by the student; 2) increase the accurate communication between the two; and 3) make each more responsive to the needs, requirements, and structures of the other.

The student service worker's role is to determine how students are best able to meet their academic, social, and personal needs. To this end, they recommend or provide programs that prepare or assist the student to effectively use the environment or change the environment to meet the needs of the students.

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[1] Delworth and Hanson, Student Services: A Handbook for the Profession, pp. 118-142.

Because of the wide range of abilities, expectations, and goals of a diverse community college population, Moore[1] contends any theoretical model for improving retention must account for a wide variety of mutually interacting and interdependent segments in the college environment. These variables for each student represent a distinct ideological, economic, and environment coherence and should not differentiate between "academic" or "support" services.

Instead, a model must be designed on a "causal" and "decision" stratum to account for the inextricably entwined variables interacting in a complex milieu of student-college environment. The model should allow for determining the problem (cause) and developing a remedy (decision) for each student. The model becomes an "adaptive" strategy based on the principles of interaction and dialogue which remain constant and open to change. As such, Moore's model includes a number of interacting and interdependent segments. The entire college environment becomes open to analysis as a problem, resource, and/or remedy.

A review of twenty-five years (1950-1975) of research on attrition led Pantages and Creedon[2] to conclude that dropping out is an extremely complicated interplay among a multitude of variables. They suggested the best theoretical framework for understanding the causes of attrition is the "college fit" or needs/press model which account for individual adjustments and adaptations between the student and college environment.

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[1] Maynard E. Moore, "Student Attrition in the Open-Door Community College: A Working Hypothesis," Community College Social Science Quarterly (Summer 1976): pp. 34-38.

[1] Timothy J. Pantages and Carol F. Creedon, "Studies of College Attrition: 1950-1975," Review of Educational Research 48 (Winter 1978):49-101.

A model incorporating the interaction theories has been presented by Vincent Tinto[1] (figure 1) and represents his concept of the behavior surrounding the decision to drop out or persist in college. He perceives retention as a longitudinal process of incorporating a series of relationships on a continuum, integrating complex interactions between a multitude of student and college variables. The higher the degree of integration, the greater the fit and commitment to the college goal and institution itself. It is further theorized that the greater the commitment, the greater the persistence or retention.

The model accounts for the student's individual attributes, family background, and pre-college schooling which can have a bearing on goal and institutional commitments. These input dimensions are interfaced with the institution's social and academic systems. Tinto recognizes that colleges place greater value on academic performance which creates an asymmetry between academic and social integration and retention. "Sticking it out" may represent an intense educational goal when there is little commitment to the institution.

While the model provides a format for the study and analysis of multifaceted behavior resulting in retention, not enough emphasis

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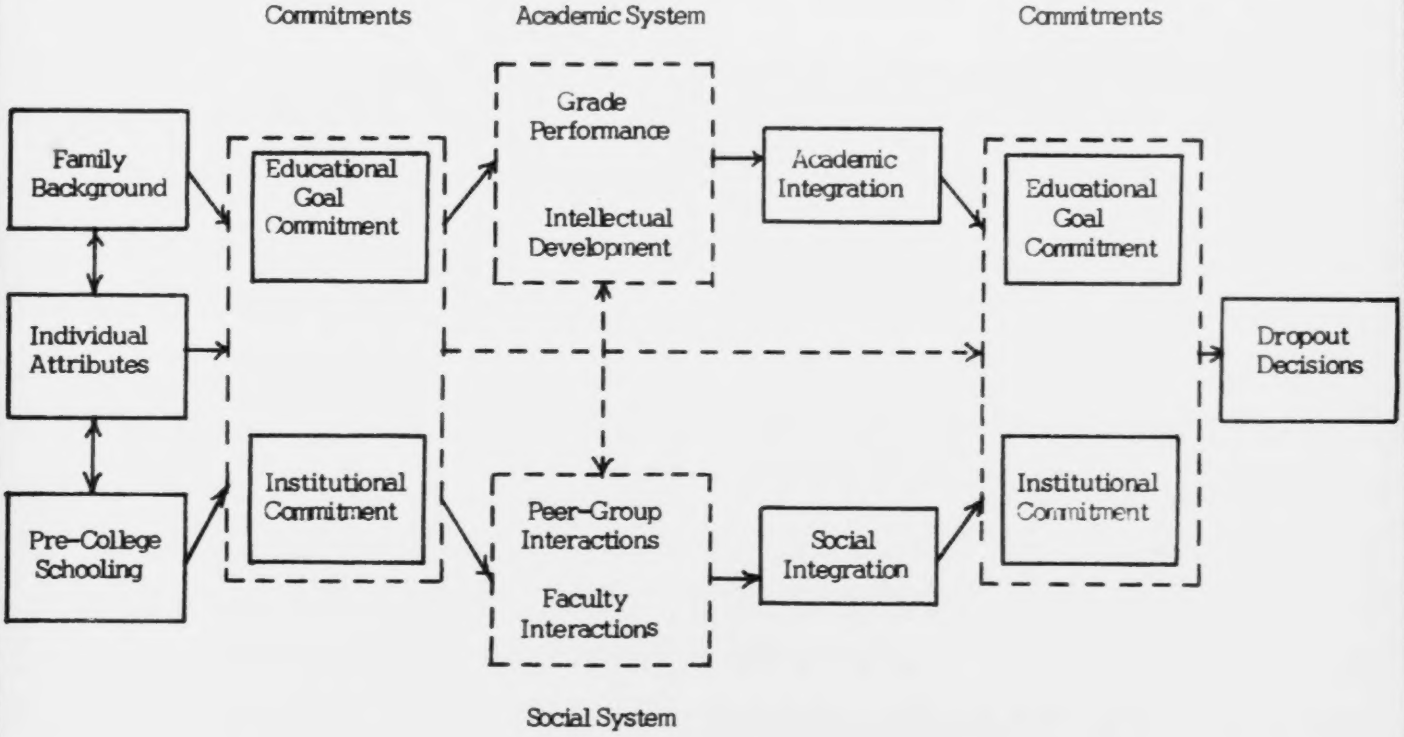
[1] Vincent Tinto, "Dropout from Higher Education: A Theoretical Synthesis of Recent Literature," Review of Educational Research 45 (Winter 1975):98-120

[1] Vincent Tinto, "Limits of Theory and Practice in Student Attrition," Journal of Higher Education 53 (November/December 1982):688-692.


Commitments
Academic System
Commitments
Family Background
Individual Attributes
Pre-College Schooling
Educational Goal Commitment
Institutional Commitment
Grade Performance
Intellectual Development
Peer-Group Interactions
Faculty Interactions
Academic Integration
Social Integration
Educational Goal Commitment
Institutional Commitment
Dropout Decisions
Social System

SOURCE: Vincent Tinto, "Dropout from Higher Education: A Theoretical Synthesis of Recent Literature," Review of Educational Research 45 (Winter 1975):95.

Fig. 1. A Conceptual Schema for Dropout from College

was placed on factors external to the institution. He indicated specific and unique retention intervention models may need to be developed for the factors of finances, sex, race, and social background. Tinto's general postulate maintains that attrition results from a lack of social and academic interaction between the student and other persons both inside and outside the college over a period of time. Interaction includes the dimensions of formal, informal, quality, and quantity of relationships.

Related Research

Most attrition-retention research has focused on individual student factors and student perceptions of why they drop out of college. While there is value in such data, it is also important to understand the specific characteristics of the institution. Most student characteristics cannot be altered, but institutional programs can be changed to provide the actions which increase retention. Research in the past helped identify individual characteristics associated with dropout prone "target" groups. It became equally important to know which institutional characteristics resulted in either attrition or retention. By combining student and institutional variables, the researcher can use the interactions of these variables to represent the true nature of complex human behavior.

Research in the 1980's concentrates on the multifaceted interactions between varied student and institutional variables. No single cause has been found to account for retention or attrition--a complex form of behavior. More recent research designs have attempted to approximate the dynamics of this phenomena and measure factors thought to contribute to retention.

Student Characteristics

Research on basic student characteristics related to retention is represented by the major findings of the work of Pantages and Creedon,[1] Astin,[2] Iffert,[3] and Sexton.[4]

The student's past academic performance and mental aptitude are the two factors which best predict student retention. The higher the educational degree sought, the more apt the student is to persevere and eventually graduate. First semester grades, the academic rating of the high school from which the student came, the student's commitment to the college, on-campus part-time employment, peer group influence and the student's overall satisfaction with college relate positively to retention.[5]

Research findings concerning the factors of age, sex, socioeconomic and level of educational attainment of parents, transfer plans, vocational and occupational goals, finances, ethnicity, and motivation show either a mixed, negative, or no relationship to retention.

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[1] Timothy J. Pantages and Carol F. Creedon, "Studies of College Attrition: 1950-1975," Review of Educational Research 48 (Winter 1978):49-101.

[2] Alexander W. Astin, Preventing Students from Dropping Out (San Francisco: Jossey-Bass, 1975), p. 45.

[3] Robert E. Iffert, Retention and Withdrawal of College Students, Office of Education Bulletin, No. 1, 1958 (Washington, D.C.: Government Printing Office, 1957).

[4] Viriginia S. Sexton, "Factors Contributing to attrition in College Populations: Twenty-five Years of Research," Journal of General Psychology 72 (April 1965):301-326.

[5] Oscar T. Lenning, Philip E. Beal, and Ken Sauer, Retention and Attrition: Evidence for Action Research (Boulder, Colo.: National Center for Higher Education Systems, 1980):15-18.

Astin's longitudinal study included over 41,000 undergraduate students in 358 four-year and two-year colleges. The students were surveyed by questionnaire at four-year intervals. He found that the primary academic factors were the best predictors of retention but also that religious background and preference, concern about college finances, study habits and educational attainment correlated to perseverence. Astin also established a similarity in the contributing factors between the two- and four-year colleges.

Though there are contradictory results from the many studies on retention, Pantages and Creedon[1] found the following to be relatively consistent. The differences between voluntary and nonvoluntary dropouts should be abandoned since there is no evidence they truly differ. Whereas gender can be a factor (such as women attending part time), age has not been found to be a significant factor. The level of the parents' education, the value they place on higher education, or the importance they place on education for their children may be the most significant, but not the primary, factors in retention.

Academic variables are consistently found to be the single most significant factor accounting for about one-half of the variance related to retention. High school grade point average, rank in class, and scholastic aptitude scores are the best measures. Low first semester grades are a good predictor for dropping out; however, high grades are not good predictors for retention or attrition.

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[1] Timothy Pantages and Carol F. Creedon, "Studies of College Attrition: 1950-1975," Review of Educational Research 48 (Winter 1978):49-101.

Research on financial reasons for leaving college or withdrawing from classes is inconsistent and confusing. It is often the socially acceptable reason given and not the real or primary reason. While financial reasons may be a factor in not enrolling in college, it has not been found to be a real reason for leaving college. They see financial reasons as more of a rationalization, and, if real, financial problems are usually only temporary.

They also conclude that one of the best theoretical frameworks for understanding the causes of attrition is the "college fit" or needs-press model. Dropping out is an extremely intricate interplay among a multitude of variables. As such, isolation and study of single or a limited number of variables will not reveal enough information about the phenomenon. Because of the limited scope of variables included in research studies, most analysis can show no more than 50 percent of the variance.

There also appears to be a shift from predicting to preventing attrition as well as a change of focus on retention rather than dropping out. This is not only manifested in the nature of the research, but in the variety of intervention techniques or programs. It seems earlier detection procedures through systematic assessment and evaluation of programs effecting retention are being carried out by the colleges.

Iffert[1] and Sexton[2] studied "dropout" factors. They found that: students are more inclined to drop out at the beginning or end of a term than in the middle; those attending on the quarter system drop out at greater rates possibly due to a greater number of "stopping places;" those dropping out later in the term tend to carry fewer units than full-time students; full-time students are less dropout prone. Usually, the final decision to withdraw is made during vacation or when college is not in session.

Rouche[3] reported that over 50 percent of community college students leave at the end of the first year. Approximately 10 percent drop out between fall registration and Christmas vacation. Most students who considered dropping out, gave thought to it during the months of June (51%), May (14%), January (10%). Seventy-seven percent made their decision to leave during summer vacation. There is little opportunity to help these students during these times since they are not in school.

This suggests that the dropout can predict, with amazing accuracy, if and when they will drop out of college and may be "preprogrammed" to attrition before any institutional factors can have an influence. This appears to be supported by the research of

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[1] Robert E. Iffert, Retention and Withdrawal of College Students, Office of Education Bulletin 1958, No. 1, Washington, D.C.: Government Printing Office, 1957.

[2] Virginia S. Sexton, "Factors Contributing to Attrition in College Populations: Twenty-five Years of Research," Journal of General Psychology 72 (April 1965):301-326.

[3] John E. Rouche, "Research Studies of the Junior College Dropout," Washington, D.C.: American Association of Junior Colleges, October 1976:32-35.

Stein[1] and Cope and Hannah[2] who found that 71 percent of all no credit or "W" grades were made up by "no shows," those who enrolled but never attended a class meeting (42%) and dropouts (28.9%). Of those who dropped out, 18.1 percent did so during the third week, 21 percent during the fourth week, 10.5 percent during the seventh, and 12.4 percent during the eighth week. They also found that science and mathematics majors drop out later in the term than those in social sciences and humanities. Twenty-five percent of the leavers first considered leaving college before they ever enrolled, and their preplanning excluded the goal of graduating. It was shown above that the first six weeks of the term are most critical.

Baratta[3] in her study of Moraine Valley Community College attrition found there is a higher retention rate between the fall and spring terms than between the spring and fall terms. She also found that 67 percent of persisters ranged in age from 19 to 27, with 32 percent 28 years of age or older. Forty-seven percent had occupational majors requiring two years or less of college as contrasted to those intending to transfer to a four-year college. Fifty-four percent had grade point averages over 3.0, 36 percent over 2.0, and only 10 percent less than 2.0. Those who dropped out were predominantly female (56%), between the ages of 19 to 27 (66%). Forty percent earned grade point averages over 3.0, 28 percent over 2.0, and 32 percent had grade point averages below 2.0, 26 percent being zero.

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[1] June B. Stein, "At What Point Students Left Classes at Minneapolis Community College, Fall Quarter, 1981," ERIC Document No. ED14570 (January 1982):10.

[2] Robert Cope and William Hannah, Revolving College Doors (New York: John Wiley and Sons, 1975):53.

[3] Mary Kathryn Baratte, "Nonpersisting Student Analysis for Fall 1977-Spring 1978," ERIC Document No. ED 156275 (1978).

In an attempt to predict community college dropouts, Gum[1] gathered data from exit and follow-up interviews at the College of San Mateo. The major reasons cited for leaving were full-time employment, finances, health, and personal problems. No significant differences were found between students who were in programs requiring transferring to a four-year college for completion or vocational programs requiring two years of college or less, those enrolled in transfer programs and those undecided as to a major, and those enrolled in vocational programs compared to those who were undecided.

He also found that students who dropped out failed to establish an "identity" with the college and failed to seek assistance for the causes that led to their attrition. Though the reasons for leaving are not necessarily the true or real reasons, the students related the basis for leaving was attributed to lack of personal attention by the teaching and counseling staff and insufficient information regarding various program options.

In another community college study, Pappas[2] attempted to isolate variables that would predict or identify the dropout student. He found no statistical significance between the dropout rate and entrance test yields, selection of instructors, student's stanine scores on entrance tests, sex, age, veteran status, marital status, race, working student, and those who took an English review course. He did find the teacher is important, the high school grade point average and entrance test scores are good indicators for retention, and it is more difficult for the working student to persist in college.

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[1] Harvey Sanford Gum, "A Study of Dropout Propensity of Selected Community College Students," Dissertation Abstracts International 34/5-A (1973):2297.

[2] George Pappas, "A Descriptive Study of the Drop-out Student in a San Diego Community College," Dissertation Abstracts International 5/5-A (1975):2695.

It has been suggested that the voluntary dropout may vary from other students. A study to ascertain if there are factors which lead to prediction of dropping out of an open enrollment college was performed by Choa.[1] She found significant predictive factors to be satisfaction with the institution, motivation as represented by the high school grade point average, and a positive family attitude about college attendance. All other predictor criteria tested were not found to be statistically significant.

She also reported that traditional predictors are better suited or more applicable to higher achieving groups who resemble the more traditional student. Traditional predictors do not apply to low achieving, high risk students. While career motivation was frequently absent in many freshmen, low achieving students were even less clear about why they were going to college.

Coupled with the intense concern about attrition is that of the transfer student from the community to the four-year college. Perhaps a bias exists in that transfer students are expected to drop out at a lower rate than vocational majors. Though Gum found no significant differences between the two, Santos'[1] study revealed new and important results.

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[1] Rose Choa, "The Voluntary College Dropout: A Multivariate Predictive Study of Voluntary College Termination in an Open Enrollment College," Dissertation Abstracts International 38/7-A (1977):3951.

He used the School and College Ability Test, the Student Profile Inventory, and a withdrawal questionnaire to gather and measure his predictive data. He found that while overall attrition in his study was at about 16 percent, transfer students accounted for only 3 percent of the total. The transfer oriented students who withdrew cited "personal reasons" most often, followed by "academic" and "employment" reasons.

Transfer, persisters, and withdrawal students were differentiated on several factors. Persisters and transfer students had higher SCAT mathematics scores. Persisters had a higher commitment to the institution than transfers and withdrawals combined. The study suggests that while transfer students exhibit the same general reasons for leaving, they display a lessened commitment or identity to the community college because their goals will be utlimately met at the transfer four-year institution.

While Rouche[2] found students at Orange Coast Community College left for the same reasons as cited by Santos, he also reported a study at Mira Costa Community College revealing that dropping out was related to an unrealistic personal image and demands of college life, and ability was not a factor. Fifty percent of the dropouts had the ability to be successful.

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[1] Robert Lee Santos, "Prediction of Student Persistence, Withdrawal, Transfer at Two Community Colleges," Dissertation Abstracts International 40/6-A (1979):3127.

[2] John E. Rouche, "Research Studies of the Junior College Dropout," pp. 32-35.

Student characteristics encompassing academic, demographic, aspirations and motivations, and financial factors reveal some relationship to retention. However, these factors do not account for enough causality to be of real value in developing action plans to increase retention, since most of the factors cannot be altered.

Institutional programs and characteristics held greater promise for research and strategies to reduce attrition. Lee Noel's[1] comprehensive study of four-year and two-year colleges found the first six months of enrollment to be critical, with counseling services playing an important role in preventing attrition. The programs having the greatest impact are counseling and advising, orientation, career planning, learning assistance, job placement, cocurricular activities, more selective admission criteria, financial aid and on-campus housing. Having a lower but positive relationship are: early warning and prediction of dropout prone target groups; increased frequency and quality of faculty interaction; exit interviews for developing early warning procedures; and well defined college mission statement policies and attitudes pertaining to retention.[2]

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[1] Lee Noel, "College Student Retention--A Campus Wide Responsibility," Journal of the National Association of College Admissions Counselors 21 (July 1976):33-36.

[2] Philip E. Beal and Lee Noel, What Works in Student Retention (Iowa City, Iowa, and Boulder, Colo.: American College Testing Program [ACT] and National Center for Higher Education Management Systems, 1980), pp. 37-72.

Student Services

Numerous and varied studies of student services and retention have been completed. Three studies are of particular note. The first was carried out by Donald Nichter.[1] Nichter found in a study of twenty-two community colleges, colleges and universities in Oklahoma a direct and linear relationship between the quality of student service programs and retention at the freshman level. The environment offers increased holding power as did the ratio of staff to students, number of retention-oriented programs, and the amount of personal counseling available to each student.

The NORCAL study included seventeen Northern California community colleges. Virtually all showed a significant relationship between a wide variety of student service programs and retention. Summer orientation, counseling, study skill courses, tutoring, skill development, and other related programs were evaluated.

In a second report of findings from a number of colleges in the NORCAL study, Kester[2] disclosed that special individual and group counseling at Merritt College for high risk students improved their retention, increased their grade point average, and the number of units completed. He also reported Foothill College found no effect on retention while there was a significant increase in grade point average and units completed. They employed an intervention program of counseling, tutoring, study skills course, and skill development courses in mathematics, reading, and writing.

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[1] Donald Lawrence Nichter, "The Impact of Student Personnel Services on Freshman Retention," Dissertation Abstracts International 40/06-A (1978):3151.

[2] Donald L. Kester, "The Lesson from the Three-Year NORCAL Attrition Study: Many of the Potential Dropouts Can Be Helped," Phase III, final report, ERIC Document No. ED 057779 (1972):1-12.

Other NORCAL findings reported by Kester were:

(A) While Merritt and Foothill reported contradictory results about retention based on total withdrawal, Reedley Community College found individual counseling, not group, was significant for retention. Analysis of variance also showed the grade point averages and units completed were significantly improved (.01 level).

(B) Sierra Community College found students who saw a counselor from one to eight times in an individual interview exhibited higher grade point averages and re-enrollment. Students voluntarily enrolled in group counseling and study skills courses had a significantly higher re-enrollment rate and grade point average.

(C) Cabrillo Community College found career planning courses and counseling to significantly improve retention, while San Mateo found tutoring produced the same results.

Kester summarized the NORCAL findings by listing the following characteristics of students most apt to withdraw. They would: 1) be more apt to be black than oriental; 2) have lower educational aspirations; 3) receive little parental encouragement for college plans; 4) express a lowered sense of the importance of college; 5) come from less affluent families and express greater concerns over finances and employment; and 6) have low ability males are more apt to leave than low ability females.

Ten years after the NORCAL study, MacMillan re-evaluated the project in view of related research and programs.[1] He found retention is improved by intervention programs aimed at individual students, particularly minorities, the older and nontraditional student, and those participating in Extended Opportunity Programs and Services. He found individual counseling, financial and tutorial assistance, orientation, and academic support services in skill areas have a significant impact on retention and success for these students.

Based on his review, he made the following five recommendations: 1) increase descriptive research to identify those needing help; 2) involve faculty in study of individual course withdrawals; 3) promote an attitude of academic success for the "high risk" student; 4) conduct thorough assessment of new students for planning and program development; and 5) provide the student support services required to increase retention and success.

An experimental program to measure the effect of career planning on short-term retention for freshmen showed significantly higher retention rates for the experimental group; those who participated in career planning.[2]

A questionnaire assessing "career maturity," values, school adjustment, college goals, attitudes, and other personal factors revealed little difference between the experimental and control group. Students with clearer career goals not only stayed in college longer, they also got higher grades.

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[1] Thomas P. MacMillan, "On Improving Student Retention: Reflections on the NORCAL Project Following a Decade of Change," paper presented at Research and Development Conference of the California Community and Junior College Association, Monterey, CA, 23-25 April 1980.

[2] Shirley Maxwell Jones, "The Impact of a Career Planning Workshop on Freshman Student Participants on Short-term Retention," Dissertation Abstracts International 44/03-A (1983):673.

No difference was found between either group on achievement level, and very few questionnaire items differentiated the control and experimental groups. Based on the results of Jones' study, it is recommended that freshmen be required to attend a career planning course to increase retention.

A study at Pensacola Junior College placed students into four groups consisting of: 1) vocation-career testing, interpretation of tests, and participation in career and personal counseling groups; 2) testing and interpretation with participation in career group counseling only; 3) testing only with no interpretation or counseling; and 4) no contact at all--the control group.[1]

Montgomery found no significant difference in retention rates between those who did or did not participate in career or personal counseling groups. Retention for the group participating in career counseling was 15 percent, while the personal counseling had a retention rate of 10 percent. The control group had a retention rate of 50 percent. She concludes, the experience of career and personal counseling alone do not signifcantly effect retention.

On the other hand, Edwards[2] found career planning plus career guidance in two South Carolina Technical Education Colleges increased retention rates. Perhaps the contradictory nature of these studies is due to the type and quality of the program, students studied, or experimental controls. As an example, Ommen[1] found group counseling was effective in reducing attrition, especially for women. He was unable to define the factors or characteristics to differentiate between those who would or would not volunteer for the group counseling. He could not substantiate that volunteering for counseling had a relationship to persistence and found the differences in counselors had no effect on retention.

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[1] Elaine F. Montgomery, "A Study of the Efffects of Career and Personal Group Counseling on Retention Rates and Self-Actualization." Dissertation Abstracts International 36/4-A (October 1975):2028-2029.

[2] Charles A. Edwards, "The Effects of Career Planning Program Plus Career Guidance on the Retention Rate of Students in Two South Carolina Technical Education Colleges," Dissertation Abstracts International 37/10-A (1976):6271.

While research results are mixed, curricular offerings need to be closely related to realistic career and job opportunities. Courses need to be presented as functionally relevant to the students' needs and interests. Intensive and planned educational and vocational counseling is needed. Both group and individual counseling on vocational-career development are needed to meet student needs while increasing retention. Individual counseling, as compared to group, appears to be more significant in increasing retention.

It is further suggested by Nichols[2] and Brown[3] that counseling to develop a greater sense of self-awareness leads to increased retention. While Nichols reported mixed findings, she found group counseling is beneficial in reducing attrition and the number of course withdrawals in high-risk students while increasing the number of units attempted and grade point averages.

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[1] Jerome Ommen, "The Effect of Group Counseling on the Persistence Rate of Entering Community College Freshmen," Dissertation Abstracts International 35/5-B, (November 1974): 2410-2411.

[2] Patricia W. Nichols, "The Comparative Effects of Human Potential Counseling, and Group Guidance on Achievement and Academic Behaviors of 'High-Risk' Junior College Students," Dissertation Abstracts International 36/6-A (December 1975):3515.

[3] Robert Alan Brown, "The Effect of Self-Awareness Classes on the Attrition Rate of College Freshmen," Dissertation Abstracts International 33/8-A (February 1973):4081-4082.

Brown found self-awareness counseling classes can lower attrition as can orientation programs. He also found volunteers for counseling did not show an appreciable increase in retention. He concludes the increases seen in retention of volunteers for counseling were attributed to counseling, not factors related to volunteering.

The findings of Nichols and Brown were essentially substantiated in the research reported by Dougan's[1] work on orientation, and Rice's[2] and Turley's[3] research on retention strategies.

Dougan found a fourteen-week orientation at the University of Michigan, Dearborn, resulted in increased but not statistically significant retention rates. The students learned to avail themselves to campus resources and opportunities more effectively, suggesting a greater degree of interaction or fit between the student and campus environment.

Rice studied six retention strategies to determine which was most effective in increasing retention. The programs were: 1) institutions with clearly stated retention policies; 2) a course scheduling process where needed classes were usually obtained; 3) orientation programs; 4) assessment of basic skills for new students; 5) registration processes; and 6) counseling-advising programs. While he found all to be cost effective and beneficial to the institution, proper course scheduling was most effective in increasing retention.

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[1] Yorbalinda L. Penton Dougan, "The Effects of a Comprehensive Orientation Program on the Quality of Effort and Retention of the Urban Commuter College Freshmen," Dissertation Abstracts International 43/4-A (October 1982):1044-1045.

[2] James Powers Rice, "A Systems Model for Student Retention at Houston Community College," Dissertation Abstracts International 43/7-A (1982):2894.

[3] Mark E. Turley, "A Study of Enrollment Strategies for Assisting Marginal Students in the Community College," Dissertation Abstracts International 41/6-A (1980):2399.

A study of enrollment strategies to assist high-risk students in Washington State Community Colleges was conducted by Turley. Low entrance scores and a low confidence level were good predictors of attrition. Programs considered most effective in increasing retention were individual and personal counseling, developmental programs, and group guidance (vocational-educational decision making, study skills, etc.).

LaNor West[1] completed a study to determine if developmental reading courses made a significant impact on retention. She found the experimental group, those who enrolled in and completed a reading class completed more courses and remained in college four to six times longer than the control group. The control group enrolled in the reading course but dropped out. The experimental group also earned higher grade point averages.

Institutional Factors

In their somewhat critical cost analysis of college programs designed to assist students, Vest and Spino[2] contend that with proper planning, colleges could retain 10 percent of the dropouts while improving the institution economically. A cost analysis of those who fail to return seems destined to move colleges to do something about attrition.

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[1] LaNor Patricia West, "The Role of Reading Ability in the Retention of Community College Students," Dissertation Abstracts International 37/9-A (1976):5645.

[2] Thomas J. Vest and William Spino, "The Survival Game--Academic Affairs and Student Personnel," paper presented at the Annual Convention of the American College Personnel Convention, Atlanta, Georgia, 5-8 March 1975.

Vest and Spino feel overduplicated campus programs are expensive and may not be as effective as believed. There are often too many programs with too much overlap. An example of redundant programs would be that of a career center, counseling services, and faculty advisors all doing the same thing. It may be quite inefficient and costly. Communication, cooperation, consolidation, and coordination of programs is suggested as being necessary in overcoming the problem.

Flannery[1] and others at Miami Dade Community College reiterate Vest and Spino's theme in suggesting attrition is interwoven with the entire college philosophy and operation and it takes a campus effort to improve it. They postulate retention can be increased through more personalized education. The more the faculty and students interact, the greater will be retention. They recommend that policies and procedures must be reviewed and revised to provide personal attention and reduce attrition.

A study of sixty-five public and private schools plus ten proprietary schools revealed a great diversity in types of policies and programs intended to increase retention. Holbrook[1] reported that no single strategy stood out as being unusually effective and most institutions felt their programs were only moderately effective. Her findings substantiated those of Lenning, Beal, and Sauer[2] and Beal and Noel.[3]

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[1] John Flannery et al., "Final Report for the Ad Hoc Committee to Study Attrition at Miami-Dade Community College," Miami-Date Community College, May 1973, ERIC Document Reproduction Service ED 085052.

Holbrook noted many of the schools in her sample revitalized their student service and advising programs while improving their curricular offerings to meet student needs and increase retention. It was necessary to enlist total campus support to implement policy changes and programs. Active support, participation, and acceptance by the faculty, students, and administration are cardinal factors in the successful implementation of attrition prevention strategies.

Policies increasing personal contact, high instructional quality, and financial aid aided immeasurably to increased retention as did college mission and goal statements truly committed to meeting the educational and personal needs of the student.

Three withdrawal policies were researched to determine which produced the highest retention rates.[4] In the first plan, students could withdraw from classes without any penalty up to the sixth week of the term. After that date, the student was assigned the grade earned at the time of withdrawal. The second plan allowed the student to withdraw without penalty up to the sixth week and an "F" given after the sixth week for withdrawal. The third plan allowed the student to withdraw without penalty after three weeks in some classes and eight weeks in others. Students received an "F" after the deadline for either deadline. Retention was found to be much better under the first plan.

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[1] Margaret Willisea Holbrook, "An Analysis of Policies and Programs for Increasing Student Retention in Institutions of Higher Education in Georgia," Dissertation Abstracts International 42/10-A (1981):4322.

[2] Oscar T. Lenning, Ken Sauer, and Philip E. Beal, Student Retention Strategies, AAHE-ERIC/Higher Education Research Report No. 8 (1980):17-43.

[3] Philip E. Beal and Lee Noel, What Works in Student Retention, American College Testing Program and the National Center of Higher Education Management Systems (1980):7-14 and 17-35.

[4] Evan Vail, "Retention of Students Over a Three-Year Period (Fall Semesters, 1962, '63, and '64) Under Three Different Drop Policies," Riverside City College, CA, ERIC Document No. ED 014286 (1966).

A great deal of attention has been devoted to improving advising programs as a major instrument in reducing attrition. The proposed advising does not always include a professionally trained counselor but frequently involves faculty.

Kesselman[1] found that even though every student thinks about dropping out, only one of every three seeks the counsel or advise of a teacher. Noel[2] points out that the first six months are the most critical in implementing an intervention counseling program to curtail attrition, and Barr[1] found improved faculty advising programs can substantially increase retention. First year attrition can be reduced from a 35 percent loss to 25 percent. Four factors are important: 1) faculty must assume some responsibility for the well-being and advising for specific freshmen; 2) teaching those students in small groups; 3) students must see faculty advisors three times a week; and 4) have the capacity to show support.

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[1] Judy R. Kesselman, "The Care and Feeding of Stop-Outs," Change, 8 (May 1976):13-15.

[2] Lee Noel, "College Student Retention - A Campus-Wide Responsibility," Journal of the National Association of College Admission Counselors, 21 (July 1976):33-36.

[3] Robert Benson Barr, "Student Retention and Advising: An Interinstitutional Comparison and Case Study," Dissertation Abstracts International 44/2-A (1983):397.

Since 85 percent of all dropouts do so in the first two years, Barr suggests an early identification (assessment) and intervention program. He further suggests colleges must increase their capacity to provide students with the experience of being personally appreciated as well as to enable its students to define and achieve goals.

Schrader[1] and Rees[2] research added other dimensions to the above. Schrader concentrated on institutional characteristics to explain retention. She found faculty advising was effective in decreasing attrition when the student was satisfied with quality of support and sense of caring by the advisor.

Where Schrader found the amount of time devoted to the student was related to retention, Rees found the frequency of contact facilitates retention, not the duration of contact. Rees suggests advisors need to be facilitative to student needs, less judgmental, empathetic, and willing to take risks in responding to student problems.

Higher education is a verbal intensive enterprise. As such, reading becomes a critical skill in successful pursuit of goals.

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[1] Cheryl A. Schrader, "The Effects of a Freshmen Intrusive Counseling Approach: Advisee Satisfaction and Reduction in Attrition," Dissertation Abstracts International 41/7-A (January 1981):2944-2945.

[2] Daniel Ko Rees, "A Study of the Relationship of Selected Variables and Their Relationship to Attrition Rates at the Small Private College," Dissertation Abstracts International 39/10-A (1979):5956

Heerman[1] found research on reading shows only a moderate relationship between reading achievement levels and retention. He also found there were limited reading programs oriented specifically toward decreasing attrition.

Correlations for the Nelson-Denny Reading Test (NDRT) show a moderate relationship to other academic predictor variables; a moderate relationship to one aspect of predicting retention. Correlation coefficients for the NDRT and other academic variables as reported in 1981 by Herman are: 1) self reported high school grade point average (.44-.48); 2) American College Testing (.55-.61); and 3) Scholastic Aptitude Test (.34-.52). While reading skills are important for college work, it is uncertain what it does for success or retention.

Knoell[2] studied 34,000 students in 32 community colleges and found full-time freshmen and transfer students were significantly more persistent than part-time students. The same results were found by a Florida Community College consortium in 1973. Part-time students probably work full- or part-time as well, owing to less commitment to college than held by a full-time student.

Strong[3] found no differences of class size on attrition. He reiterates that research in community colleges consistently shows effective counseling increases retention and the longer the time between counseling-advising and registration for classes, the higher the probability for attrition.

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[1] Charles E. Heerman, "What the Literature Says About the College Reading Program and Its Role in Student Retention Efforts," paper presented at Annual Meeting of the College Reading Association, Louisville, KY, 29-31 October 1981.

[2] Dorothy M. Knoell, "Changing Enrollment Patterns - Changing Functions," College Board Review, 99 (Spring 1976):22-25.

[3] David H. Strong, "The Effect of Class Size upon Dropout Rate," Mathematics Associations of Two-Year Colleges Journal 8 (Spring 1974):7-8.

The NORCAL project,[1] as well as those by Dallas,[2] Flannery,[3] Adams,[4] Reimanis,[5] Weinrich,[6] and Aarons[7] support and reinforce Noel's findings that intervention programs increase retention. Other institutional characteristics found to be related to retention were: clearly defined missions; high status or prestige of the college; private colleges; Catholic affiliation; high cost; attitude and pressures of close friends; and special academic programs (honors, foreign study, etc.).

In 1980, the Carnegie Council[8] expressed its expectation for an all-out effort to increase retention rates in higher education.

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[1] Thomas F. Macmillan and Donald L. Kester, "Promises to Keep: NORCAL Impact on Student Attrition," Community and Junior College Journal 43 (February 1973):45-46.

[2] Gladys E. Dallas, Attrition Prevention through Counseling Among Community College Students: NORCAL, Phase III (Napa College, California, 1971).

[3] John Flannery, et al, Final Report for the Ad Hoc Committee to Study Attrition at Miami-Dade Community College (Miami: Miami-Dade Community College, 1973).

[4] Glenn A. Adams, "Preventative Career Counseling--Proving that it Works," Journal of College Placement 34 (Spring 1974):26-33.

[5] Gunais Reimanis, "Student Attrition and Program Effectiveness," Paper presented at the Annual Forum of the Association for Institutional Research (British Columbia, 1973).

[6] J. William Weinrich, et al, Keeping Dropouts In: Retention of Students Identified as High Probability Dropouts (Washington, D.C.: Department of Health, Education, and Welfare, 1971).

[7] Howell Aarons, "An Evaluation of an Individualized Interpersonal and Interdisciplinary Team Approach to Remediation at Mohegan Community College" (Ed.D. Research Project, Nova University, 1973).

[8] Carnegie Council on Policy Studies in Higher Education, Three Thousand Futures: The Next Twenty Years for Higher Education (San Francisco: Jossey-Bass, 1980):43-44.

At the same time, Lenning, Beal, and Sauer[1] were stating that the interaction of the student with the institution and the subsequent fit of multivariant processes was the differentiating factor between dropouts and persisters. Meanwhile, building on Tinto's[2] retention theory of socio-psychological interaction, Terenzini, Lorang, and Pascarella[3] developed a test which had thirty-four scales, five of which predicted retention. The five scales were: (1) peer group relations; (2) informal interaction with faculty; (3) faculty concern for student development; (4) academic and intellectual development; and (5) institutional/goal commitments.

Personality and motivational factors are not adequately researched to provide any conclusive results in predicting dropouts. Understanding of personality factors has been more useful for preventative counseling than predicting dropouts. Motivational factors appear to hold the greatest promise for curbing attrition. Accurate research is needed in the areas of vocational-educational goal setting, effects of parental or peer attitudes on retention, and the impact of a student's values on staying in college. Without an adequate understanding of individual student's personal make-up, attempts to match a student to the institution will be less successful.

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[1] Oscar T. Lenning, Philip E. Beal, and Ken Sauer, Retention and Attrition: Evidence for Action Research (Boulder, Colo.: National Center for Higher Education Management Systems, 1980):43-67.

[2] Vincent Tinto, "Dropout from Higher Education: A Theoretical Synthesis of Recent Research," Review of Educational Research 45 (Winter 1975), pp. 89-125.

[3] Patrick T. Terenzini, Wendell G. Lorang, Jr., and Ernest T. Pascarella, "Predicting Freshmen Persistence and Voluntary Decisions: A Prediction," Paper presented at the annual convention of the American Research Association (Boston: April 1980):1 and 5.

Psychological Traits

There is a paucity of research concerning psychological or personal factors related to retention. As suggested earlier, this may be the most promsing area for research in finding a more comprehensive and deeper understanding of retention. A few studies employ personality assessments.

De Vecchio[1] used the Comparative Guidance and Placement Program (CGP), Omnibus Personality Inventory (OPI) and a biographical inventory to study the characteristics of nonreturning students. Nonreturning students earned lower scores on the reading, verbal, sentence, mathematics, and academic scales of the CGP and higher social introversion scores on the OPI. The dropouts attended smaller high schools, had lower high school grade point averages, and intended to complete fewer years of college than returning students.

Hannah[2] used the Omnibus Personality Inventory in thirteen private colleges to produce an extremely informative and penetrating study on the personal characteristics of dropouts.

He found no differences on aptitude between all dropouts compared to persisters nor between females of either group. Dropouts think at a less simplistic level, have greater tolerance for ambiguity and experimentation, express impulses in terms of overt action, are more hostile, aggressive and anxious, and create poorer personal impressions.

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[1] Richard D. DeVecchio, "Characteristics of Nonreturning Community College Freshmen," Journal of College Student Personnel 13 (1972):429-432.

[2] William Hannah, "Personality Differentials Between Lower Division Dropouts," Journal of College Student Personnel 12 (1972): 16-19.

Dropouts were found to be more "maladjustive in direction," more aloof, self-centered, impulsive, and assertive. They have "less settled personalities," are more restless, unpredictable in spirit, think deeply and act on feelings rather than measured consequences. They manifest more anxiety about their environment and selves, exhibiting a need for independence which they constantly test. They characteristically withdraw from contact because of uncertainty, confusion, and lack of direction.

A study of adults at Seminole Junior College in Oklahoma by Tramwell[1] revealed contrary results to the above studies. Adults were not significantly effected by personal or family problems, commuting, transportation problems, or lack of vocational goals. They were significantly effected by scheduling conflicts, class related problems, and institutionally related problems, which led to dropping out. Adults, however defined, may exhibit maturity and needs different than the "typical" college student.

A study of three California community colleges measuring "functional potential" was performed by Florence Brawer.[2] She defined functional potential in terms of the ability to: 1) tolerate ambiguity; 2) delay gratification; 3) exhibit adaptive flexibility; 4) demonstrate goal directness; 5) relate to self and others; and 6) express and feel a clear sense of personal identity. She feels the data shows that students drop out for reasons related to factors other than what the college does to the student.

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[1] Bobby Lee Tramwell, "Comparison of the Interpersonal Factors Related to the Attendance and Retention Rates of Adults at a Community College," Dissertation Abstracts International 38/9-A (1977):5208.

[2] Florence B. Brawer, "A Comparison of the Personality of Community College Student Dropouts and Persisters," Los Angeles: University of California, ERIC Document No. ED 083980 (1973):10-18.

Brawer found dropouts were less committed but more realistic, tended to be isolated and alienated, and had poor ego strength. The similarities of these findings to Hannah's may be due in part to the use of the Omnibus Personality Inventory among other instruments.

Munro[1] found similar results in her attempts to validate Tinto's model which views student retention as an integrative-interactive process between the institution and student. On a national sample of 6,018 students, she identified the following factors as predictors for dropping out: 1) educational aspirations of parents and students (the most powerful predictor to achieve an educational goal); 2) educational aspiration (more powerful than academic integration); 3) academic integration; and 4) high school academic performance.

Still, Munro's path analysis approach only accounted for 14 percent of the total variance. This points again to the lack of identification of significant causes of attrition when only the student attributes are studied and the institution is not included.

Provost[2] used the Meyers-Briggs Type Indicator (MBTI) and Leisure Satisifaction Scale (LSS) to measure personality and leisure satisfaction as it relates to attrition. She also found withdrawers differed from persisters in that they were more introverted and perceptive. They were not generally involved in campus social groups and less able to relax through leisure (affiliation and peer interaction), showed reduced decision-making capacity, and had lower grade point averages.

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[1] Barbara Hazard Munro, "Dropouts from Higher Education: Path Analysis of a National Sample," American Educational Research Journal 18 (Summer 1981):133-141.

[2] Judith A. Provost, "Personality Type and Leisure Satisfaction as Factors in College Attrition," Dissertation Abstracts International 43/9-A (1982):2894.

Cope and Hannah[1] contend there is no such thing as a dropout personality. Instead, they feel that dropping out is the result of a series of poor interactions between the student and college environment. While Timmons[2] found male and female dropouts exhibited poorer self-concepts and were more dissatisfied with their lives, voluntary dropouts saw their decision as improving their self-concept.

Whether due to an individual and personal inability to adapt or lack of institutional support systems, all evidence leads to an interaction of the two in developing a dropout syndrome. Theory, research, and interventive-interactive programs are beginning to dominate the contemporary approach to retention.

Interaction

Tinto theorizes that dropping out is an interactive multidimensional process between the individual and the institution based on Durkheim's theory of suicide. Breaking one's ties with a social system stems largely from a lack of integration with the system. Often overlooked in Tinto's theory is the "economics of energy" concept that has extremely practical implications for colleges. Not only does dropping out create a loss to society and the individual, it may also prove a financial loss to the institution.

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[1] Robert G. Cope and William Hannah, Revolving College Doors: The Causes and Consequences of Dropping Out, Stopping Out, and Transferring, (New York, John Wiley & Sons, 1975), p. 61.

[2] Frank R. Timmons, "Freshman Withdrawal From College: A Positive Step Toward Identity Formation? A Follow-up Study," Journal of Youth and Adolescence 7 (June 1978):159-73.

Tinto and Cullen[1] added another dimension to the interaction theory with the cost benefit theory. They contend individuals will direct their energies toward those goals that are perceived to maximize the ratio of benefits to costs. The concept takes into account internal and external forces in that a student's decision to drop out is weighed against perceived investment of time, energy, emotion, and resources to staying in college.

In assessing the major factors leading to dropping out, those bearing most heavily on the "economics of energy" decision, Tinto and Cullen quite accurately report the four most significant characteristics. They are: 1) the individual himself; 2) the family; 3) the educational experience prior to college; and 4) the commitment (measured by interaction or involvement) to the goal of college completion.

In Horton's[2] study, the Student Opinion Survey was used to survey students who withdrew and failed to return in a subsequent semester. He attempted to assess the relationship between student perception of college environment and attrition. His study revealed older students had higher retention rates because they were more satisifed with the college. The quality of relationships between faculty, students, and nonteaching staff appears related to student satisfaction and retention. He found race, age, and the number of hours worked impacts the amount and quality of student interaction with the college environment, staff, and faculty. His study revealed that the probability of a student returning in a subsequent semester decreases as the number of within semester course withdrawals increases. This also suggests the number of courses in which a student is enrolled is a factor of involvement and commitment.

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[1] Vincent Tinto and John Cullen, Dropout in Higher Education: A Review and Theoretical Synthesis of Recent Research, (New York: Teachers College, Columbia University, 1973) p. 7.

[2] James Franklin Horton, Jr., "Multivariate Correlations of Community College Environment and Course Attrition to Retention in a Selected Community College," Dissertation Abstracts International 43/11-A (1982):3520.

Terenzini and Pascarella[1] tested Tinto's theory of integration and attrition by measuring how certain attitudinal and behavioral measures of academic and social integration related to dropping out. They found no relationship between attrition and precollege traits of academic integration, level of social integration, and interaction between sex, major, or race.

Terenzini and Pascarella's results indicate academic integration may be more important than the social. Academic integration accounted for 5.6 percent of retention, while social integration accounted for 3 percent. The frequency of a student's interaction with the faculty was the largest contributor to retention, while interaction effects both social and academic performance. Extracurricular participation did not show any significance for retention.

Terenzini and Pascarella revealed intrinsic or personal rewards may be more important than the extrinsic. Consequently, the decision to stay in college or leave becomes a very personal one, and correlates of attrition may be different for different people and interactions may be more important than any other variable. Their sophisticated study of single and interaction variables, 76 in all, could only account for 25.6 percent of the variation.

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[1] Patrick T. Terenzini and Ernest T. Pascarella, "The Role of Students' Backgrounds and Levels of Academic and Social Integration in College Attrition: A Test of a Model," paper presented at the Annual Conference of the AERA, Toronto, March 1978.

In another study,[1] six research designs intended to test Tinto's theory were enlisted, and it was found that contacts with the faculty and the way the student interacts with the college environment to be more significance in retention than all factors. Background characteristics were of little significance. Of the studies surveyed one could account for 30 percent of variance. The rest were lower.

Endo and Harpel[2] also found informal faculty interaction increased the probability of retention. The frequency of student-faculty interaction was found to have a greater impact on retention than did academic or intellectual outcomes, and had a positive overall effect on perceived satisfaction of the college experience.

In another study to test Tinto's model on student retention, Pascarella and Terenzini[3] found persisters differed significantly from dropouts in that: 1) peer group interactions were more important, closer and more involved; 2) there was greater interaction (formal and informal) with faculty; 3) persisters perceived faculty as being interested and willing to help; 4) experienced more academic successes; and 5) they felt they made the right decision to go to college, will re-enroll, and considered it important to graduate from college, an institutional and goal commitment.

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[1] Patrick T. Terenzini and Ernest T. Pascarella, "Toward the Validation of Tinto's Model of College Student Attrition: A Review of Recent Studies," Research in Higher Education 12 (1980):26.

[2] Jean J. Endo and Richard L. Harpel, "The Effects of Student Faculty Interaction on Students' Educational Outcomes," Research in Higher Education 16 (1982):15-138.

[3] Ernest T. Pascarella and Patrick T. Terenzini, "Predicting Freshmen Persistence and Voluntary Dropout Decisions from a Theoretical Model," Journal of Higher Education 51 (January/February 1980):65-77.

Munro's[1] path analysis test of Tinto's model was longitudinal and conducted on a national sample and produced new and confirming data of the above. She found precollege characteristics predicted college interaction but did not directly affect the dropout decision. Like Pascarella and Terenzini, Munro found factors relating to the integration of the student into the academic setting of the college was more important than factors relating to the social setting, and the student's commitment to the goal of college completion had the strongest effect on the decision to remain in college. Confirming other studies, she found the perceived parental aspirations had the strongest direct effect on the student's educational pursuits.

Tinto[2] responded to the many researchers validating his interaction-retention theory. He cites the limitations of any social-behavioral theory and contends theoretical models only explain a narrow range of behaviors of interactions. Theoretical models can only approximate the real and cannot explain everything.

Tinto reports the dropout rate from 1880 to 1980 has remained at about 45 percent. This seems to indicate programs to increase retention have not been very numerous or successful. He feels all colleges should develop a retention program allowing students to complete the goal they desire. Based on research evidence, such programs must be based on the interaction of the student's intellectual and social life into the very fiber of the institution, including the faculty and staff.

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[1] Barbara H. Munro, "Dropouts from Higher Education Path Analysis of a National Sample," American Educational Research Journal 18 (Summer 1981):139.

[2] Vincent Tinto, "Limits of Theory and Practice in Student Attrition," Journal of Higher Education 53 (November/December 1982):688.

Retention programs can become opportunities for institutional renewal and allied with on-going and longitudinal self-studies and evaluations. Pertinent and effective policies assuring total institional commitment are required and begins with preadmission assessment to the completion of the student's goal.[1]

Bean has developed a causal model of retention based on past research. He summarized his findings by stating:

> . . . background characteristics of students must be taken into account in order to understand their interactions within the environment of the institution of higher education . . .[2]

The student perceives the experience from both objective (i.e., grade point average, participation in co-curricular activities) and subjective (i.e., practical value of education, quality of the institution) points of view. These variables defined the degree of satisfaction (commitment) and account for institutional commitment and retention. The most significant factor in determining retention was commitment, while "boredom" most closely correlated with attrition. While Bean could only account for 21 percent of the variance in the female dropouts and

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[1] Patrick T. Terenzini, "The Evolution of Three Basic Designs for Studying Attrition," paper presented at the Annual Forum of the AIR, Houston, May 1978.

[2] John P. Bean, "Dropouts and Turnovers: The Synthesis and Test of a Causal Model of Student Retention," Research in Higher Education 12 (Issue 2, 1980):155-182.

12 percent for the males, he continued to maintain that "the focus" needs to remain on the interaction and fit between students and their institutions.

The role and function of Sierra College's student development program is consistent with philosophical premises stated in The Student Personnel Point of View,[1] in that it provides interactive services to assist students in meeting their needs and goals.

The goals of the California community colleges, as set forth by the California Postsecondary Education Commission (CPEC)[2] and the California Community College Board of Governors, have been incorporated as follows:

1. A commitment to transfer programs, occupational preparation, general education, and continuing education, and
2. Local control and orientation, equality to access, no tuition, and comprehensiveness of programs.

From inception to the present, CPEC has recommended no changes in their basic mission of an open door policy. They recommend increased counseling and advising to maximize institutional resources and increase the number of transfer students and retention. Still, there is no mention of a mission statement regarding a comprehensive student development program.

The Commission and the Board of Governors have expressed concern that only one-third of community college students attend for one term, with only 20 percent enrolled by the end of of the third year. They feel that fewer students should be dropping out, as evidenced in their disquietude over the fact that three-fourths of the students are part-time (less than twelve units) with a modal student workload of one course.

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[1] American Council on Education, The Student Personnel Point of View, American Council on Education Studies, Series 1, Vol. 1, No. 3, Washington, D.C.: American Council on Education, 1937, p. 1.

[2] California Postsecondary Education Commission, Mission on Functions of the California Community Colleges, Commission Report 81-14 May 1981, California Postsecondary Education Commission, (Sacramento, CA), pp. 1-14.

This dissatisfaction exists in spite of a promulgation of the open door policy, demands for comprehensive programs, lack of a student development mission statement, and other contradictory expectations. They are simultaneously demanding in their expectations, virtually nonsupportive in providing financial or professional assistance, and very critical that the outcomes are not commensurate with the higher expectations.

If a positive relationship was to be established between Sierra College's student development program and increased retention rates, a link between past research and theory will have been made. The basis for future research to test the existence (or causal effects) of interaction to retention will have to been advanced.

In summary, theory and research on retention has gone through a dramatic change. From early studies, focusing on student characteristics, personal characteristics of students, institutional dynamics, and the interactive fit of the student to the institution represent the present emphasis. Interaction of a multitude of factors representing the student and institution are replacing those studying single factors.

Retention has become the emphasis as opposed to attrition or dropping out. A major shift in perspective is apparent in the change from prediction to prevention strategies. More models, instruments, and programs are implemented to enhance the interaction of the student with the institution in an attempt to increase personal commitment of the student to the institution which theoretically leads to increased retention.

As shown above, research retention has emphasized the single factors of a student's character or the unitary activity of a student development program. Contemporary research focuses on the interaction between the student and institution, but continues to concentrate on one variable at a time rather than a combination of elements. This study was undertaken to build upon former research by developing a new line of investigation devoted to the analysis of interaction effects of a combination of selected student development activities on retention.

CHAPTER III

METHODOLOGY

Restatement of the Research Problem

Retention research normally focuses on student characteristics or on individual activities of a student development program. There is little research measuring the impact of a total program on retention. Interaction and student development theory suggest that increased participation in college activities can lead to a better fit between the student and college environment. When this occurs, dissonance is reduced and increased retention is apt to follow.

The major purpose of this study was to investigate the relationship between student involvement in selected activities of the Sierra College student service program and retention. The study concentrated on the individual and cumulative effects of these selected student activities on retention and investigated whether the degree of participation or certain student characteristics lent themselves to predicting which students were most likely to remain in college. A point of diminishing returns, where increased participation in student development activities does not show a commensurate effect on retention, was also investigated.

Research Methodology and Design

Generally, the causal comparative research method for this study employed an ex post facto investigation of first-time, day students in a rural community college in Northern California, over the Fall, 1981, and Spring, 1982, semesters and had participated in the college orientation program. The study explored the cause-effect relationships between factors of the independent and control variables and retention.

The categorization and classification of independent and control variables was undertaken to describe phenomena under study. Demographic data on the control variables was made available to better understand the population and for making comparisons and evaluations. Activities of the student development program were categorized where appropriate. The descriptive or survey research method undertaken did not confirm causal relationships but defined the parameters (student characteristics) of the population to which the results might be generalized.

Correlational research was applied to student development activities (factors determining the independent or predictor variable), student characteristics (control variable), and the rate of retention (criterion or dependent variable) to determine the strength of relationship between them. A correlational matrix representing the intercorrelations of all variables is provided.

The research design incorporated analysis of variance (randomized block design) to determine the main and interactive effects of student development activities on retention. Knowing which independent variables account for the variance in retention is important and necessary for evaluation and program development purposes. Multiple regression techniques were planned but found unnecessary because preliminary analysis indicated little or no relationship between factors of the independent and control variables to the dependent variable.

With the exception of individual counseling-advising appointments maintained in a Counseling Center log, all other data elements (orientation, reading test scores, courses taken, grades, and student demographics) were readily available in the college's official documents and recorded for each student in a computer data file. Counseling appointment data were recorded on computer tape and merged with the appropriate student record. Data element definitions, location, collection procedures, and analysis techniques are explained in greater detail below.

Selection of Subjects

The "population" of interest for the major research question in this study was the first-time, day students who initially enrolled for the Fall, 1981, semester at Sierra Community College, a rural two-year public community college in Northern California. The subjects were studied over the Fall, 1981, and Spring, 1982, semesters. Those selected had met the following criteria: 1) had never attended college before; 2) had attended Sierra College Fall, 1981, orientation-advising program; and 3) had recorded reading placement scores. There were 2,902 (1,864 day and 1,038 evening) first-time students (26 percent of the total enrollment), of which 1,140 of the 2,902, or 39 percent, met the above selection criteria. Sixty-one percent of all day students (N=1,864) had participated in the orientation process and were included in the study.

A day student, by legal definition, is one who takes all day or a combination of day and evening courses. Evening students take one or more classes between 4:30 and 9:30 P.M. The population sample or "frame" investigated attended orientation and received information and professional assistance from counselors about goal identification, student development services, college policies, responsibilities, and procedures related to being a college student. They took a reading assessment test used for recommended placement in reading and other courses and had been advised by counselors about appropriate courses in which to enroll and alternatives to be taken if necessary, consistent with the student's test score and verbalized goals. Subsequently they registered in one or more classes.

The students studied were viewed as being relatively free of certain intervening factors related to past collegial experiences as would probably be represented by older students taking only one evening class, students in their second or third continuous year, transfers from other colleges, or those returning to college after an absence of a semester or more. This elimination process was intended to control the influence of prior college experience on the results. Also eliminated from the study were 104 special education (mentally retarded) students without reading scores participating in noncredit courses designed specifically for them, 620 day students without reading scores; and 33 students with reading scores who received a "No Grade" (NG) for a disallowed work experience course only. These latter students did not qualify for inclusion since they were not officially enrolled in any course as of first census.

The above elimination process (figure 2) resulted in three groups included for initial descriptive analysis. They were: 1) 1,760 day students with and without reading scores; 2) 1,107 with reading

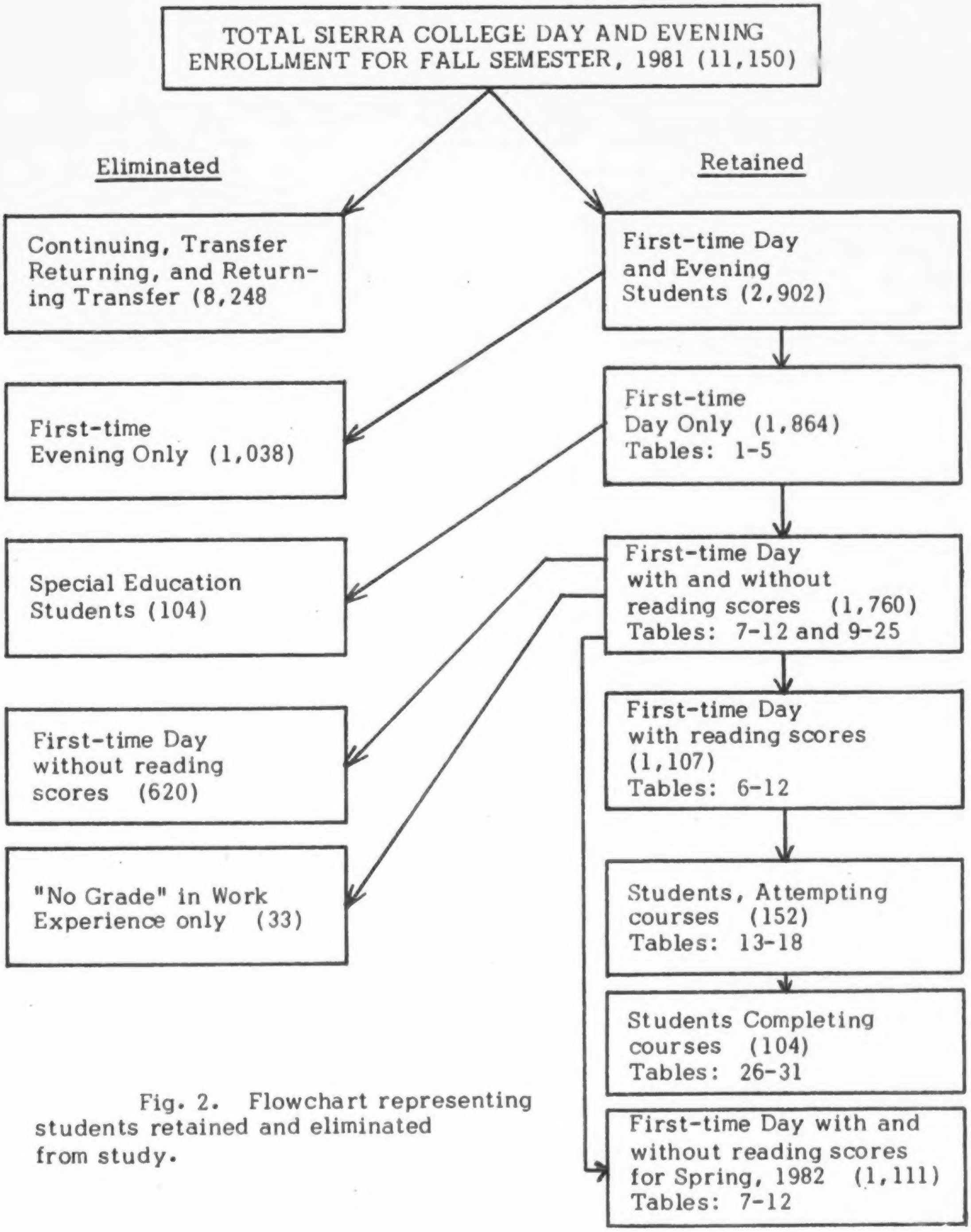
TOTAL SIERRA COLLEGE DAY AND EVENING ENROLLMENT FOR FALL SEMESTER, 1981 (11,150)
Eliminated
Retained
Continuing, Transfer Returning, and Returning Transfer (8,248
First-time Day and Evening Students (2,902)
First-time Evening Only (1,038)
First-time Day Only (1,864) Tables: 1-5
Special Education Students (104)
First-time Day with and without reading scores (1,760) Tables: 7-12 and 9-25
First-time Day without reading scores (620)
First-time Day with reading scores (1,107) Tables: 6-12
"No Grade" in Work Experience only (33)
Students, Attempting courses (152) Tables: 13-18
Students Completing courses (104) Tables: 26-31
First-time Day with and without reading scores for Spring, 1982 (1,111) Tables: 7-12

Fig. 2. Flowchart representing students retained and eliminated from study.

scores; and 3) 1,111 students of the original 1,760 who returned for the Spring, 1982, semester.

It was necessary to determine if those with (N=1,140) and without N=724) reading scores differed significantly on control variables. If no significant differences were to be found, indicating the two samples were essentially the same on the elements measured, those without reading scores could be dropped from further analysis. Age, number of courses taken, and grade point averages were subjected to the *t* test (table 3.1) to determine if there were significant differences between the means of the two groups. The educational goal, race, sex, and veteran status was tested by chi square (tables 3.2, 3.3, 3.4, and 3.5) to determine if there were significant differences between observed and expected frequencies. The level of significance was set at .05.

TABLE 3.1

t TEST BETWEEN STUDENTS WITH (N=1,140) AND WITHOUT (N=724) READING SCORES BASED ON AGE, COURSES TAKEN, AND GRADE POINT AVERAGE

Variable	With Reading		Without Reading			
	Mean	Variance	Mean	Variance	t	P
Age	23.37	88.95	24.72	110.05	2.13	$<.05$*
Courses	8.22	23.53	7.96	24.36	1.61	n.s.
Grade Point	1.83	1.70	1.85	1.72	.37	n.s.

*Significant at $<.05$ level

With the exception of age, no differences were found between those with or without reading scores. Those without reading scores

TABLE 3.2

OBSERVED AND EXPECTED FREQUENCIES OF EDUCATIONAL GOALS[a] FOR STUDENTS WITH AND WITHOUT READING SCORES

	1	2	3	4	5	6	7	8	Total	Chi Square	df	p
With Reading										16.76	7	n.s.
Observed	103	305	134	155	72	115	172	83	1,139			
Expected	87.84	301.34	135.42	165.31	65.27	125.05	182.39	73.81	1,136.43			
Without Reading												
Observed	41	189	88	116	35	90	127	38	724			
Expected	56.16	192.66	86.58	105.69	41.73	79.95	116.61	47.19	726.57			
Totals:												
Observed	144	494	222	271	107	205	299	121	1,863			
Expected	144	494	222	271	107	205	299	121	1,863			

[a] The educational goals are:

1	Transfer
2	Transfer with an Associate of Arts/Associate of Science degree
3	Associate of Arts/Associate of Science vocational degree
4	Associate of Arts/Associate of Science general education degree
5	Certificate
6	Upgrade job skills
7	Recreational/Personal
8	Other

TABLE 3.3

OBSERVED AND EXPECTED FREQUENCIES OF RACE[a] FOR STUDENTS WITH AND WITHOUT READING SCORES

	1	2	3	4	5	6	7	Total	Chi Square	df	p
With Reading											
Observed	17	15	9	1,024	64	1	8	1,138	3.27	6	n.s.
Expected	18.91	15.25	9.15	1,026.02	57.34	.61	8.54	1,135.82			
Without Reading											
Observed	14	10	6	658	30	0	6	724			
Expected	12.09	9.75	5.85	655.98	36.66	.39	5.46	726.18			
Total	31	25	15	1,682	94	1	14	1,862			

[a] The ethnic racial categories are:
1 American Indian
2 Asian
3 Black
4 Caucasian
5 Hispanic
6 Filipino
7 Other

TABLE 3.4
OBSERVED AND EXPECTED FREQUENCIES OF MALE AND FEMALE STUDENTS WITH AND WITHOUT READING SCORES

	Male	Female	Total	Chi Square	df	p
With reading	544	594	1,138	.214	1	n.s.
Without reading	338	385	723			
Total	882	979	1,861†			

†Gender of three students not reported

were but 1.35 years older than those with reading scores. Due to the large numbers in each group, statistical significance in age was reached even though it is believed there is no practical significance in the difference.

It was decided at this point to drop from further analysis the 104 special education students (mentally retarded) taking noncredit courses. They had no reading scores and were such a small group that their inclusion in prior analyses would have had no effect on the final results. Deleting this group of students left a balance of 1,760 students with and without reading scores (1,864 less 104) which constitutes the sample of this study.

A thorough comparison of the population with and without reading scores (tables 3.1-3.5) was computed. No significant differences were found between those with or without reading scores, except by age as mentioned above. Special education students (N=104) and those without reading scores (N=620) were dropped from further

TABLE 3.5

OBSERVED AND EXPECTED FREQUENCIES OF VETERAN STATUS[a] FOR STUDENTS WITH AND WITHOUT READING SCORES

	1	2	3	4	Total	Chi Square	df	p
With Reading								
Observed	1,052	48	30	8	1,138+	1.13	3	n.s.
Expected	1,050.42	50.63	27.45	7.32	1,135.83			
Without Reading								
Observed	670	35	15	4	724			
Expected	671.58	32.37	17.55	4.68	726.18			
Total	1,722	83	45	12	1,862			

[a] Veteran status categories are:
1 Not a veteran
2 Veteran not receiving benefits
3 Veteran receiving benefits
4 Veteran dependent receiving benefits

+Two students not properly identified

analysis. This left a sample frame of 1,107 (1,140 less 33 students with "NG" in a disallowed work experience course) with reading scores who were categorized into eight unique treatment groups for randomized block design for analysis of variance[1] (table 3.6). Students in each treatment group are matched on reading scores with cohorts in all of the other groups.

TABLE 3.6

THE TOTAL NUMBER OF SUBJECTS IN EACH TREATMENT GROUP BY MAIN AND INTERACTIVE VARIABLES

Group No.	Treatment Variable	N
I	No Treatment at all	475
II	Counseling-Advising Only	164
III	Personal Development Only	28
IV	Personal Development and Counseling Advising	27
V	Skill Development	223
VI	Skill Development and Counseling-Advising	102
VII	Skill and Personal Development	48
VIII	Skill and Personal Development and Counseling-Advising	40
	Total	1,107

Two groups of subjects were analyzed using this technique. The first represented those who attempted Skill and Personal

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[1] Roger E. Kirk, Experimental Design: Procedures for the Behavioral Sciences, (Belmont, CA: Wadsworth Publishing Company, 1969), pp. 237-243.

Development courses. The second group, matched on reading scores in the same manner as the first group, represented those who completed Skill and Personal Development courses. The intent was to determine if there were differences in retention rates between those who completed and those who merely attempted courses of the independent variable.

Instrumentation

Data collection instruments for this study consisted of the official forms and records of the college, which include the Nelson-Denny Reading Test results, the college application, registration and add-drop forms, census forms, faculty grade forms, and counselor appointment logs.

Independent or predictive variables include the following student development data elements and their location:

Counseling-Advising (CA): Records of individual appointments between counselors and students were available in the Counseling Center. The verification of daily appointments for each counselor are kept by the Counseling Office Clerk. Each student who kept an appointment was identified by name and social security number and was recorded.

Personal Development (PD) and Skills Development (SD) Courses: Course enrollments were maintained as a part of the student's record and were available in the student's computer file or Records Office files.

The dependent or criterion variable (retention rate) was determined for each student from transcript data stored in the Sierra College computer files. Units completed, units not completed, and the resultant retention rate for two semesters were programmed and calculated. The score was stored in the student's individual data file. Personal and Skill Development courses were not eliminated from computation of the retention rate, since they remained a part of the dependent variable.

Student characteristics or control variables are, with the exceptions of reading scores and counseling appointments, data elements taken from the college's application document and filed in the Records Office. The data elements are also recorded in the personal history data file maintained in the computer for each student.

The grade point average control variable was computed from student records maintained in the computer or on permanent records (transcripts) retained in the Records Office. Grade points are awarded on the traditional scale of zero to four points for grades of "F" through "A", respectively. Incompletes will be computed as an F with no grade points. Credit (CR) and no credit (NC) are not included (see p. 13 for definition).

The Nelson-Denny Reading Test was administered at orientation with the results recorded on an answer sheet. The score was also recorded in the computerized data file maintained for each student. The answer sheet is maintained in the Learning Skills Center office files. The test (FORM D) was used as a relative measurement of aptitude. It has been shown to be slightly better than the Minnesota Scholastic Aptitude Test (MSAT) in predicting overall grade point averages and showed a correlation of 0.67 with achievement at the University of Minnesota.[1]

Data Collection Procedure

Data were collected from the college's records described above. The population of interest was determined by enrollment on the fourth Monday (census day) and at the end of the Fall, 1981, and Spring, 1982, semesters. All independent, dependent, and control variables except counseling-advising appointments were contained in computer managed data files maintained individually for each student. Counseling-advising appointments were not filed in the computer and were tabulated manually into the computerized data file created for each student in the study. The retention rate (see page 14) and student development index (see page 15) were also calculated and recorded for each student.

Processing and Analysis of Data

The causal-comparative *ex post facto* methodology of the data analysis included the following classifications of independent, dependent, and control variables represented in the study:

Independent Variables: Each course was assigned a weighting factor representing the total number of semester hours required for each. Total hours of participation (Student Development Index) for each of the three variables were computed for each student.

The selected student development activities and respective hours were defined to include the following:

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[1] Harley F. Garrett, "A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Sciences and Teachers Colleges," *Journal of Experimental Education*, December (1949), pp. 130 and 107-109.

1. Counseling-Advising appointments with individual students (1 hour per appointment)
2. Personal Development Courses
    a. PD 1, College Survival (18 hours)
    b. PD 2, Dynamics of Personal Development (18 hours)
    c. PD 3, Career Decision Making (18 hours)
3. Skill Development Courses
    a. SD 28, Special Problems (54 hours)
    b. SD 35, Advanced ESL (30 hours)
    c. SD 54, Directed Study (54 hours)
    d. SD 60, Basic Learning Skills (27 hours)
    e. SD 65, Basic ESL (36 hours)
    f. SD 73, Spelling Improvement (36 hours)
    g. SD 81, Basic Arithmetic Skills (36 hours)
    h. SD 82, Advanced Arithmetic Skills (36 hours)
    i. SD 83, Arithmetic Review (30 hours)
    j. SD 91, Study Skills (18 hours)
    k. Reading 50, Reading for Information (30 hours)
    l. Reading 70, Reading Improvement (54 hours)

Dependent Variable: Student's retention rate was defined operationally as the difference between the number of units of course work attempted and the number of units of course work not completed for a passing grade, divided by the total number of units attempted. The rate of retention was computed for each of the first two semesters (Fall, 1981, and Spring, 1982) of the first year of college for each subject in the study.

The number of units attempted is the number of units in which the student is enrolled as of Monday of the fourth week of each semester studied. Course work units with grades of incomplete, withdrawal, failure, or no credit were treated as non-completed course work. The number of units completed is the number of units for which the student received a letter grade of A, B, C, D, or CR at the end of each semester. The retention rate formula allows for analysis of complete withdrawal from college. More significantly, it also measures the partial dropouts, those dropping some, not all, courses.

Control Variables: Selected student and educational characteristics were operationally defined as a subset of variables routinely measured on the students at the college. Specifically, they were:

1. Age
2. Sex
3. Race/ethnicity (white or nonwhite)
4. Student's education goal (transfer to another college, Associate of Arts degree, vocational certificate, recreation, upgrade job skills, recreational/personal enrichment, and other)
5. Two- or four-year major
6. Length of time to complete the goal cited in number 4 (one semester or more than one semester)
7. Nelson-Denny Reading Test (Form D) score
8. College grade point average

The description and analysis of relationships between and among these independent, dependent, and control variables were reported using mean rates and standard deviations of the criterion and frequencies and percentages in the categories of the three variables. Analysis was also made by means of the appropriate correlation coefficients and one-way analysis of variance (and correlation ratios) relating these variables.

Independent and control variables were tested to determine if a statistically significant relationship and strength of association existed with the dependent variable. The retention rate was entered into a multiple correlation and one-way analysis of variance to determine those variables that could be entered into a stepwise multiple regression analysis. The multiple regression was not needed, since only counseling-advising showed any statistically significant relationships when tested by analysis of variance.

Examination of the distributional characteristics of the independent, dependent, and selected control variables was undertaken. Results of analysis indicate most distributions were skewed. Selected variables for the population of interest were summarized and defined as frequencies.

Student development activities were separated into three groups: 1) Counseling-Advising; 2) Personal Development courses; and 3) Skill Development courses. Each student's participation was weighted according to the number of hours assigned, as stated on pages 74 and 75.

Differences in the independent, control, and dependent variables of the original 1,760 students with and without reading scores and the 1,111 of that group who returned for the Spring, 1982, semester were measured. Comparisons of those returning for the second semester and the 1,107 with reading scores were also made. These descriptive statistics emphasized the independent and control variables exhibited by those who failed to return for a second semester.

The independent and dependent variable for each student was entered into a correlational analysis to determine the degree of relationship between the two. An intercorrelational matrix of sixteen variables was completed to determine the relationship between these variables.

A randomized block design analysis was employed where students were matched on reading scores and assigned to eight treatment blocks or groups representing the individual and combined student development activities. The analysis provided the main and interaction effects of Counseling-Advising, Personal Development courses, and Skill Development courses.

The analysis of variance was done by a randomized block design which assigns subjects to one of eight blocks, each representing a unique treatment. The subjects within each group were homogenous based on treatment. Subjects in each group were matched with a cohort subject in other groups by reading scores. Each subject had a counterpart in each of the other seven treatment blocks.

Some treatment blocks had smaller pools of subjects on which to match. It was necessary in some instances to match subjects with slightly different reading scores where exact matches could not be made because of the small sample size in some treatment blocks.

To be eligible for a match, a score had to fall within ±10 percentile points representing no more than 8 raw points on the Nelson-Denny Reading Test Tables, Form D, Grade 13. When an exact match could not be made, the closest possible score within the aforementioned parameters would be chosen from the subjects in each treatment group.

The number of inexact matches was minimal, and only in a few cases were the ±10 range parameters employed.

Frequently, only one subject with a particular reading score was available as a match for those in the other seven groups. Complete randomization would have been possible only in several of the larger treatment groups. Generally, in each group the number of subjects with the same score ranged from five to eight. When more than one subject was available, the first name was always selected for analysis. When the reading score could not be matched exactly, and the high and low alternative scores differed by the same amount from the desired score (e.g., ±2), the lower score was chosen.

Slight departures from homogeneity of variances do not seriously affect significance tests using the F statistic in a fixed level treatment.[1] The error effect for a randomized block design will be smaller than the error effect for a completely randomized design if the block effect is appreciably greater than zero[2]. A standard F test was used for the randomized block design to confirm an F greater than one (mean square divided by the mean square residual which equals the error). The sum of squares between treatments, blocks, and the residual accounts for the effects of matching. However, a shortcoming of *ex post facto* design is that subjects cannot be randomly assigned to groups by matched scores if they do not exist, limiting analysis capability.[3]

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[1] Roger E. Kirk, *Experimental Design: Procedures for the Behavioral Sciences* (Belmont, CA: Wadsowrth Publishing Company, 1969), p. 184.

[2] Ibid., p. 15.

[3] Ibid., p. 103

The statistical design for the study lent itself to a stepwise multiple regression analysis in which the criterion variable (rate of retention) was regressed on several predictor variables (hours of participation in student development activities) and control variables including reading test scores and grade point averages which would have been entered into a regression equation as covariates to assess their relationship to the retention rate. All of the variables, except counseling-advising, turned out to have only very weak association with the criterion variable, and consideration of a multiple regression analysis was abandoned. In addition, multiple regression is limited in that it shows independent results of each variable, while analysis of variance reveals the individual as well as the combined effects of the independent variable, the major emphasis of this study.

The initial and secondary analysis entailed a descriptive and correlational treatment. A randomized block experimental design and analysis of variance were pursued as primary analysis.

Limitations

The study is limited by selection of subjects and the one-year duration of analysis. A longitudinal study of three to four years length of time could reveal more comprehensive and definitive information about the population and variables studied. It is possible student psychological and sociological maturation would result in increased retention rates.

Instrumentation could be improved with personal interviews to gain a better understanding of the effects of student development activities on retention. All other factors related to internal validity are of little or no significance to the study's methodology or design.

External validity, the extent to which the results can be generalized to other populations, settings, treatments, or measurement variables, is limited by the degree to which the subjects in the study compare to other first-time freshmen. Matching of subjects on reading scores reduces to some degree the generalization of results. The interaction between the independent variable and the student characteristics of each group may have an effect on subsequent results because of treatment confounding.

The results of this study are limited to a rural, day, first-time freshman class enrolling at Sierra College, a two-year community college for the Fall semester of 1981, and returning for the Spring, 1982, semester. There is a generalizability that the year of 1981 is typical and the results are like other freshman classes at Sierra College as well as community colleges with characteristics similar to Sierra College.

Implications and Significance of the Study

This study is of primary significance to Sierra College in learning more about retention of its students, as well as any relationship there might be between retention and selected components of its student development program. The information should serve as a basis for further inquiry and support. Activities that do not relate to retention could be evaluated in greater depth for the purpose of modification or deletion. Perhaps a mandatory program of activities would be considered to promote retention.

Development of an institutional attitude to increase retention could serve as the impetus and commitment to policy and program change. With decreasing enrollments and funding, cost effective retention strategies should be developed through the student development program. Retention could become a top institutional priority.

Programs, courses, and activities in the standard curriculum could be studied to determine which have higher retention powers and why. Curricular and student development activities could be combined and matched to each student. Such a program would include information about student characteristics, reading, writing, and mathematical aptitudes needed for specific classes, and courses or programs best suited for meeting individual needs. Each student's unique characteristics could be evaluated by the program for proper course advising and placement. As an example, if a student reads at the fifth grade level, General Psychology, with a fourteenth grade reading level, would not be an allowed course unless or until the student's reading level justified placement in the course.

Student development programs are difficult to evaluate because they often lack a mission statement setting forth goals and objectives to be met. It is also difficult to quantify and evaluate the complexities of human behavior, the nexus of any program. This study may be instrumental in serving as an evaluative tool both on an institutional level and for the student, personally.

The research contributes to the existing body of knowledge of student development programs and retention. Other colleges may wish to replicate the study to determine if they would achieve the same findings. Where a positive and significant relationship have been found, Sierra and other colleges may renew their institutional commitment of resources to meet student needs within the parameters of their missions, goals, and resources.

Those research questions answered in the affirmative may provide greater support for advising, evaluation, cost effectiveness, follow-up, and continued research. Effective decision making based on accurate and complete empirical evidence would justify the existence of those activities found to relate positively to retention. The threat of extinction of student development activities and personnel could be relieved, freeing those energies committed to anxiety to more creative and constructive endeavors. When this is done, the student, the institution and society will benefit.

CHAPTER IV

FINDINGS

Introduction

The preceding chapters developed the background of the need for retention research and this study, theoretical and related literature on retention, and the analytical approach to answering basic research questions. The results of analysis will be presented in a format to answer the research questions followed by an interpretive discussion of the theory, related literature, and rationale for the study in light of the results. Descriptive data (Subsidiary Research Question Five) will be presented first in the sections on findings and intepretations to develop a better understanding of the characteristics of the students and variables studied as presented in subsequent research questions and analysis.

Research utilizing multiple variables is needed to capture the intricately complex behavior exhibited in the manifested act of dropping out of a class or out of college. Many factors operate concurrently to moderate, suppress, or accentuate behavior related to attrition. Any variable may be directly related to dropping out, but it can be influenced or mediated by other unmeasured variables. Though limited because of breadth of scope, studies including a broader spectrum of variables are more apt to account for more of the variance related to attrition.

A twenty-five year review of attrition studies by Pantages and Creedon[1] concluded with their feelings about retention research methodology. They contend the most meaningful research is longitudinal, covering four or more years and employing precise operational terms for retention and attrition. They also found two-way analysis to be not very productive, whereas simultaneous treatment of multiple variables held greater promise for a better understanding of retention-attrition behavior.

Findings

The preceding chapters of this dissertation contained the discussion of the background and need for the study and theoretical foundations that led to the research questions. Chapter IV has two major components. Reported in this section are the results and analysis of findings related to the main and subsidiary research questions. The concluding section of this chapter will provide an interpretation of these findings and a summary.

A description of the population based on nineteen variables and presented in the form of means, frequencies, and percentages is employed to introduce the students studied. The analysis will differentiate between the 1,111 students with and without reading scores who returned for the second semester from the original population of 1,760 students and the 1,107 students with reading scores.

A description of those first-time, day students who enrolled and failed to return for a second semester adds information to the institution's intelligence for a better understanding of who leaves or stays in college. It is valuable to know the demographics of the population, sample, and those who leave when developing a "drop-out profile" as well as identifying "high risk," target populations for whom preventive programs can be implemented.

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[1] Timothy J. Pantages and Carol F. Creedon, "Studies of College Attrition: 1950-1975," Review of Educational Research 48 (Winter 1978): pp. 49-101.

Of the 1,760 students studied (N=1,107 with reading scores), 1,111 returned for the Spring, 1982, semester. Those who participated in orientation and had reading scores (N=1,107) returned for the second semester at a greater rate (817 students and 74%) than the 653 who had no reading scores and did not participate in orientation who dropped out (N=359) at a 55 percent rate. The 649 students who failed to return for the second semester represented 37 percent of the original population of 1,760.

Four-hundred and two (23 percent) of the 1,760 students saw a counselor one or more times during the 1981-82 year. The number of appointments per student ranged from 1 to 11, for a total of 669 appointments, producing a mean of .38 for the total population or 1.66 for the 402 students who saw a counselor. Fifty-one percent of the students saw a counselor once, 18 percent twice, 8 percent three times, and the remaining 23 percent with 4 to 11 appointments.

Day students (with and without reading scores) in both semesters were measured on 19 factors describing if and how they differed. The variables measured were: 1) units attempted; 2) units completed; 3) courses attempted; 4) courses completed; 5) skills development courses taken; 6) personal development courses taken; 7) counseling-advising appointments; 8) other courses taken; 9) retention rate; 10) Skills Development course weights; 11) Personal

Development course weights; 12) grade point average; 13) reading scores; 14) age; 15) educational goal; 16) time to complete goal; 17) two- or four-year major; 18) sex; and 19) race.

Tables 4.7, 4.8, 4.9, 4.10, 4.11 and 4.12 depict the differences on several variables between the 1,760 students who enrolled in the Fall of 1981, the 1,107 with reading scores, and those who returned (1,111) for the Spring of 1982. The results represent one semester's performance only. Table 4.7 displays the units attempted, units completed, number of courses attempted, and number of courses completed. There were increases in the Spring, 1982, semester means of these four variables, indicating either those who returned for the second semester increased the number of units and courses attempted and completed or those who dropped out may have been less committed and carried fewer units. The removal of these students from the data base could have the effect of raising the means. Students who participated in orientation and had reading scores had higher means on all four criteria. Those who attended orientation enrolled in more courses than the other two groups reported.

Table 4.8 displays the factors of Skill and Personal Development courses taken, the number of Counseling-Advising appointments, the number of other courses taken. While the mean number of Skill and Personal Development courses taken decreased, the number of other courses increased, as did the retention rate. All students in the Fall of 1981, averaged 3.74 courses taken, compared to 4.38 taken by those enrolled in the Spring of 1982. This represented an increase of 0.64 courses. Students who participated in orientation averaged 4.39 courses in the Fall of 1981.

TABLE 4.7

DIFFERENCES BETWEEN THE 1,760 STUDENTS WITH AND WITHOUT READING SCORES, AND THE 1,107 STUDENTS WITH READING SCORES IN THE FALL SEMESTER OF 1981, AND THE 1,111 STUDENTS WITH AND WITHOUT READING SCORES WHO RETURNED FOR THE SPRING SEMESTER OF 1982, ON UNITS AND COURSES ATTEMPTED AND COMPLETED

Variable	Term	Group and Number	Range	Mean	Variance	S.D.
Units Attempted	Fall 1981	With and Without Reading = 1,760	.00 - 22.00	9.82	24.34	4.93
		With Reading = 1,107	.00 - 22.00	11.68	16.94	4.12
	Spring 1982	With and Without Reading = 1,111	.50 - 26.00	11.62	22.27	4.72
Units Completed	Fall 1981	With and Without Reading = 1,760	.00 - 19.00	6.44	30.39	5.51
		With Reading = 1,107	.00 - 19.00	8.12	30.31	5.51
	Spring 1982	With and Without Reading = 1,111	.00 - 20.00	7.95	31.92	5.65
Courses Attempted	Fall 1981	With and Without Reading = 1,760	1.00 - 12.00	3.74	3.58	1.89
		With Reading = 1,107	.00 - 12.00	4.39	3.00	1.73
	Spring 1982	With and Without Reading = 1,111	1.00 - 14.00	4.38	3.54	1.88
Courses Completed	Fall 1981	With and Without Reading = 1,760	.00 - 9.00	2.47	4.27	2.07
		With Reading = 1,107	.00 - 9.00	3.07	4.44	2.11
	Spring 1982	With and Without Reading = 1,111	.00 - 10.00	3.06	4.70	2.17

TABLE 4.8

DIFFERENCES BETWEEN THE 1,760 STUDENTS WITH AND WITHOUT READING SCORES, AND THE 1,107 STUDENTS WITH READING SCORES IN THE FALL SEMESTER OF 1981, AND THE 1,111 STUDENTS WITH AND WITHOUT READING SCORES WHO RETURNED FOR THE SPRING SEMESTER OF 1982, ON SKILLS AND PERSONAL DEVELOPMENT COURSES TAKEN, COUNSELING-ADVISING APPOINTMENTS, AND OTHER COURSES TAKEN

Variable	Term	Group and Number	Range	Mean	Variance	S.D.
Skills Development Courses Taken	Fall 1981	With and Without Reading = 1,760	.00 - 4.00	.30	.36	.60
		With Reading = 1,107	.00 - 4.00	.41	.44	.66
	Spring 1982	With and Without Reading = 1,111	.50 - 5.00	.20	.31	.56
Personal Development Courses Taken	Fall 1981	With and Without Reading = 1,760	.00 - 3.00	.14	.21	.46
		With Reading = 1,107	.00 - 3.00	.14	.19	.44
	Spring 1982	With and Without Reading = 1,111	.00 - 3.00	.05	.07	.27
Counseling-Advising Appointments*	Fall 1981	With and Without Reading = 1,760	.00 - 11.00	.37	.82	.90
		With Reading = 1,107	.00 - 11.00	.50	1.07	1.04
	Spring 1982	With and Without Reading = 1,111	.00 - 11.00	.53	1.12	1.06
Other Courses Taken	Fall 1981	With and Without Reading = 1,760	.00 - 10.00	3.30	3.25	1.80
		With Reading = 1,107	.00 - 10.00	3.84	2.74	1.66
	Spring 1982	With and Without Reading = 1,111	.00 - 10.00	4.13	3.51	2.87

*Counseling appointments are aggregated totals and not segregated by semesters.

Returning students and those participating in orientation were more apt to see a counselor than the total population. It is possible returning students were likely to see a counselor more often because they were there twice as long as those who left after the first semester. Of the 1,760 students, 402 (23%) saw a counselor, while 351 (or 32%) of those returning for the second semester (N=1,111) saw a counselor. Three-hundred and thirty-three (30%) of those attending orientation saw a counselor. While fewer numbers of the returning students saw a counselor, they saw them more frequently. Aggregated totals for counseling appointments are used rather than segregated by semester or group. Subsequent analysis will have to evaluate the impact or relationship of Counseling-Advising to retention.

Table 4.9 represents the means of retention rates and Skills and Personal Development course weights for both semesters. It was found that the retention rate for those returning for a second semester (.66) was slightly greater than the mean for those participating in orientation (.65). The total Fall, 1981, population retention rate was .62.

Consistent with the decrease in Skills and Personal Development (table 4.8) courses taken from Fall, 1981, to Spring, 1982, there was a commensurate decrease in the weights (total number of hours of participation) of these two factors of the independent variable. In both cases the percentage of reduction was considerable, with Skill Development hours decreasing by 39 percent per student and Personal Development by 59 percent. The findings are consistent with the decrease in the number of such courses attempted and completed.

TABLE 4.9

DIFFERENCES BETWEEN THE 1,760 STUDENTS WITH AND WITHOUT READING SCORES, AND THE 1,107 STUDENTS WITH READING SCORES IN THE FALL SEMESTER OF 1981, AND THE 1,111 STUDENTS WITH AND WITHOUT READING SCORES WHO RETURNED FOR THE SPRING SEMESTER OF 1982, ON RETENTION RATE, AND SKILL AND PERSONAL DEVELOPMENT COURSE WEIGHTS

Variable	Term	Group and Number	Range	Mean	Variance	S.D.
Retention Rate	Fall 1981	With and Without Reading = 1,760	.00 - 1.00	.62	.17	.41
		With Reading = 1,107	.00 - 1.00	.65	.15	.39
	Spring 1982	With and Without Reading = 1,111	.00 - 1.00	.66	.14	.38
Skills Development Course Weights	Fall 1981	With and Without Reading = 1,760	.00 - 450.00	16.05	1,781.02	42.20
		With Reading = 1,107	.00 - 261.00	20.12	1,603.81	40.05
	Spring 1982	With and Without Reading = 1,111	.00 - 324.00	9.81	1,112.62	33.36
Personal Development Course Weights	Fall 1981	With and Without Reading = 1,760	.00 - 72.00	2.41	84.43	9.19
		With Reading = 1,107	.00 - 72.00	2.49	77.88	8.83
	Spring 1982	With and Without Reading = 1,111	1.00 - 72.00	1.00	45.11	6.72

For the sample studied, returning students earned the highest grade point averages (2.05) as reported in table 4.10. Those students attending orientation were next, with an average of 2.00, followed by the total population with 1.92. The difference of 0.13 indicates the 1,760 students received more grades of failure, incomplete, and withdrawal than the 1,111 who returned for the second semester (Spring, 1982).

Higher mean percentile scores were earned on the Nelson-Denny Reading Test by those students attending orientation, returning for the second semester, and the total population, in that order (table 4.10). Although students without reading scores "failed" to return at a higher rate, raising the average from 25.24 to 31.21, a number of those with higher reading scores also failed to return as evidenced by the difference (40.13 to 31.21) between the reading scores of those attending orientation and the returning group. As with correlational coefficients, percentile scores cannot be averaged. However, percentiles were the only scores available for the reading test and are being employed as relative measures.

Table 4.10 suggests older students were more inclined to drop out between semesters. The mean age for the Fall, 1981, semester population was 23.63 years, while the mean Spring, 1982, semester age was 22.44. It is of particular importance to note that those attending orientation and having reading scores had a mean age of 20.79. The 17 to 30 age group comprised 86.19 percent of the Fall enrollment and 90 percent in the Spring. There was a 34.02 percent reduction in enrollment from Fall to Spring in this 17 to 30 age group. The largest decreases in enrollment from the first to the second semester occurred

TABLE 4.10

DIFFERENCES BETWEEN THE 1,760 STUDENTS WITH AND WITHOUT READING SCORES, AND THE 1,107 STUDENTS WITH READING SCORES IN THE FALL SEMESTER OF 1981, AND THE 1,111 STUDENTS WITH AND WITHOUT READING SCORES WHO RETURNED FOR THE SPRING SEMESTER OF 1982, ON GRADE POINT AVERAGE, READING SCORES, AND AGE

Variable	Term	Group and Number	Range	Mean	Variance	S.D.
Grade Point Average	Fall 1981	With and Without Reading = 1,760	.00 - 4.00	1.92	1.91	1.38
		With Reading = 1,107	.00 - 4.00	2.00	1.59	1.26
	Spring 1982	With and Without Reading = 1,111	.00 - 4.00	2.05	1.60	1.27
Reading Scores	Fall 1981	With and Without Reading = 1,760	.00 - 99.00	25.24	820.33	28.64
		With Reading = 1,107	101 - 99.00	40.13	706.54	26.54
	Spring 1982	With and Without Reading = 1,111	.01 - 99.00	31.21	847.62	29.11
Age	Fall 1981	With and Without Reading = 1,760	17 - 82	23.63	93.06	9.65
		With Reading = 1,107	17 - 82	20.79	26.72	5.17
	Spring 1982	With and Without Reading = 1,111	17 - 82	22.44	71.27	8.44

in the 30 to 82-year-old age group with an attrition rate of 54.73 percent.

Table 4.11 presents the difference between the student's educational goals, the length of time to complete those goals, and type of major. Retention rates associated with educational goals were: 1) personal and recreational (38%); 2) upgrading of job skills (48%); 3) other nonlisted reasons (56%); and working toward a certificate (60%).

There was a 57 percent reduction between the Fall of 1981, and the Spring of 1982, in the number of students who had indicated they would meet their goal in one semester. A more positive perspective is that 43 percent of the students who intended to stay but one semester remained in college for at least one more semester. Students declaring a four-year major persisted at a greater rate than those with a two-year objective. Four-hundred and ninety-four (44%) of the two-year majors dropped out from Fall, 1981, to Spring, 1982, while only 154 (25%) of the four-year majors dropped out.

Males constituted 53 percent of the student population and stayed in college at a higher rate than women, who withdrew at a 38.34 percent rate compared to men at 35.39 percent (table 4.12). Retention rates for Asians (88%) and Blacks (83%) were higher than those for Caucasians (63%) or Hispanics (62%). However, there were so few minorities (10%) that racial and ethnic data were dealt with in terms of white and nonwhite for the purpose of statistical analysis. Nonwhites withdrew at a lower rate (33.72%) than whites (37.15%).

A model profile compiled from data in table 4.12 would indicate the typical student dropout to be a middle-aged Caucasian or Hispanic

TABLE 4.11

DIFFERENCES BETWEEN THE 1,760 STUDENTS WITH AND WITHOUT READING SCORES, AND THE 1,107 STUDENTS WITH READING SCORES IN THE FALL SEMESTER OF 1981, AND THE 1,111 STUDENTS WITH AND WITHOUT READING SCORES WHO RETURNED FOR THE SPRING SEMESTER OF 1982, ON EDUCATIONAL GOAL, SEX, AND MAJORS

	Fall 1981		Spring 1982		Difference [1]	1,107 with Reading Scores
Variable	N	% of 1760	N	% of 1111	N %	N %
Educational Goal						
Transfer	144	8.18	94	8.46	50/34.72	103/9.30
Transfer with AA or AS degree	481	27.33	377	33.93	104/21.62	394/35.59
AA or AS degree vocational	211	12.00	142	12.78	69/32.70	158/14.27
AA or AS degree general education	255	14.49	183	16.47	72/28.24	193/17.44
Certificate	100	5.68	60	5.40	40/40.00	60/5.46
Upgrade job skills	191	10.85	92	8.28	99/51.83	80/7.23
Recreational/personal	261	14.83	98	8.82	163/62.45	58/5.24
Other	116	6.59	65	5.85	51/43.97	60/5.46
Time to Complete Goal						
One semester	145	8.30	63	6.12	82/56.55	33/2.98
One or more semesters	1,605	91.70	1,043	93.88	562/35.02	1,068/96.48 6 unknown=0.54
Majors						
Two-year	1,134	64.49	640	57.61	494/43.56	609/55.01
Four-year	625	35.51	471	42.39	154/24.64	497/44.90

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[1] between Fall (N=1,760) and Spring (N=1,111) divided by N of Fall for %

TABLE 4.12

DIFFERENCES BETWEEN THE 1,760 STUDENTS WITH AND WITHOUT READING SCORES, AND THE 1,107 STUDENTS WITH READING SCORES IN THE FALL SEMESTER OF 1981, AND THE 1,111 STUDENTS WITH AND WITHOUT READING SCORES WHO RETURNED FOR THE SPRING SEMESTER OF 1982, ON SEX AND RACE

Variable	Fall 1981		Spring 1982		Difference[1]	1,107 with Reading Scores
	N	% of 1,760	N	% of 1,111	N %	N / %
Sex						
Male	938	53.00	606	54.54	332/35.39	584/53.00
Female	819	47.00	505	45.46	314/38.34	523/47.00
Race						
American Indian	29	1.65	19	1.71	10/34.48	22/2.00
Asian	25	1.42	22	1.98	3/12.00	14/1.27
Black	12	.68	10	.90	2/16.67	5/0.45
White	1,588	90.33	998	89.91	590/37.15	996/89.97
Hispanic	92	5.23	57	5.14	35/38.04	66/5.96
Filipino	1	.06	1	.09	0.00	1/0.09
Other	11	.63	3	.27	8/72.72	3/0.26

[1] % difference between Fall, 1981, (N=1,760) and Spring, 1982, (N=1,111) divided by N for %

male or female pursuing a recreational/personal or upgrading of job skills objective for one semester. He or she attended orientation, had a relatively high reading score, and saw a counselor once. The dropout was apt to have enrolled in a Skills or Personal Development course and maintained a slightly lower (.04) retention rate and grade point average (.13), while attempting (.73) and completing (.59) fewer courses.

Tables 4.13 through 4.18 represent the analysis of variance treatment of main and interactive effects of the Fall and Spring semesters on retention rate. A randomized block design with nineteen students in each of eight treatment cells matched on reading scores of students were employed to measure the effects of the various treatments of the independent variable on retention rate, units completed, and courses attempted. As can be seen from the results, counseling remained the only factor showing any consistent and statistically significant effect on retention rate.

Research Questions

Major Research Question. What was the individual and combined effect of the interactive relationships of selected student development activities to retention rates in the Fall semester of 1981, for first-time, day students at Sierra College entering the Fall semester, 1981 (tables 4.13 and 4.14)?

The analysis of variance presented in table 4.13 clearly indicates that Counseling-Advising is the only treatment variable having a statistically significant impact on retention. When counseling is paired with other variables, the counseling variance does not have a commensurate effect on the combinations. These results clearly exhibit counseling accounts for variance (significant at $<.05$) in the dependent variable, retention. Statistically significant main and interactive effects of all other variables or treatments were not in evidence. It appears lack of any treatment may account for more variance than certain skill development courses which suggests those in Skill Development courses may represent an educationally disadvantaged group. They consistently had lower means and F values than all other treatments, including no treatment at all.

Table 4.14 shows the mean rates for the main and interactive effects on the dependent variable. Counseling-Advising coupled with

TABLE 4.13

ANALYSIS OF VARIANCE OF MAIN AND INTERACTIVE EFFECTS OF EIGHT TREATMENT GROUPS ON RETENTION RATE

Source	SS	df	MS	F	p
Blocks	25,178.68	18	1,398.82	1.54	n.s.
Treatments[a]					
S	69.80	1	69.80	0.07	n.s.
P	1,398.16	1	1,398.16	1.54	n.s.
C	3,850.16	1	3,850.16	4.24	$<.05$*
SP	75.33	1	75.33	0.08	n.s.
SC	1.10	1	1.10	0.00	n.s.
PC	1,188.32	1	1,188.32	1.31	n.s.
SPC	119.91	1	119.91	0.13	n.s.
Residual	114,211.22	126	906.44		
Total	146,092.68	151			

[a] The main treatment categories are:
S = Skill Development Courses
P = Personal Development Courses
C = Counseling-Advising
* Significant at $<.05$ level

TABLE 4.14

MEAN RETENTION RATE FOR MAIN AND INTERACTIVE EFFECTS OF EIGHT TREATMENT GROUPS[a]

		C	$\bar{C}$	Totals	
S	P	.77	.76	S=.72	
	$\bar{P}$	.77	.60		
					P=.76
$\bar{S}$	P	.79	.73	$\bar{S}$=.74	$\bar{P}$=.70
	$\bar{P}$	.78	.64		
Totals		.78	.68		

[a] There are 19 matched students in each of 8 treatment groups.

Personal Development courses produces the highest mean (.79), followed by Counseling-Advising by itself (.78) of the group studied, the lowest mean was representative of those who participated in Skill Development courses only (.60). The next lowest mean was obtained by students who had not participated in any treatment at all.

Subsidiary Research Question One. Did the main and/or interaction effects of participation in the selected student development activities (Counseling-Advising, Personal and Skill Development courses) vary according to units completed (tables 4.15 and 4.16) or courses attempted (tables 4.17 and 4.18)?

Tables 4.15 and 4.17 show counseling having a statistically significant effect on the number of units completed and courses attempted (statistically significant at $<.05$). As was the case in retention rate, no other main or interactive effects other than counseling showed any statistically significant relationship.

Tables 4.16 and 4.18 exhibit the means of units completed and courses attempted. In both cases, the highest means were represented by those students who participated in Counseling-Advising only. The lowest means in both instances were held by those students who participated in Skill Development courses only.

Subsidiary Research Question Two. What was the relationship between selected independent and control variables and retention rate (tables 4.19 and 4.20)?

The means, variance, standard deviations, and number of subjects representing sixteen variables are found in table 4.19. The variables are: 1) retention rate; 2) number of units attempted; 3) number of units completed; 4) total courses attempted; 5) total

TABLE 4.15

ANALYSIS OF VARIANCE OF MAIN AND INTERACTIVE EFFECTS OF EIGHT TREATMENT GROUPS ON UNITS COMPLETED

Source	SS	df	MS	F	p
Blocks	2,282.78	18	126.82	1.36	n.s.
Treatments[a]					
S	37.50	1	37.50	0.4	n.s.
P	3.04	1	3.04	0.03	n.s.
C	1,044.65	1	1,044.65	11.20	$<.05$*
SP	22.52	1	22.52	0.24	n.s.
SC	.6	1	.6	0.0	n.s.
PC	135.48	1	135.48	1.45	n.s.
SPC	20.99	1	20.99	0.22	n.s.
Residual	11,742.73	126	93.20		
Total	15,290.3	151			

[a] The main treatment categories are:
S = Skill Development courses
P = Personal Development courses
C = Counseling-Advising
* Significant at $<.05$ level

TABLE 4.16

MEAN NUMBER OF UNITS COMPLETED FOR MAIN AND INTERACTIVE EFFECTS OF EIGHT TREATMENT GROUPS[a]

		C	$\overline{C}$	Totals	
S	P	20.61	16.63	S= 18.38	
	$\overline{P}$	21.26	15.00		P=18.72
$\overline{S}$	P	20.21	17.47	$\overline{S}$=19.37	$\overline{P}$=19.01
	$\overline{P}$	23.90	15.90		
Totals		21.49	16.25		

[a] There are 19 matched students in each of 8 treatment groups.

TABLE 4.17

ANALYSIS OF VARIANCE OF MAIN AND INTERACTIVE EFFECTS OF EIGHT TREATMENT GROUPS ON COURSES ATTEMPTED

Source	SS	df	MS	F	p
Blocks	351.35	18	19.52	1.41	n.s.
Treatments[a]					
S	14.54	1	14.54	1.05	n.s.
P	15.80	1	15.80	1.14	n.s.
C	201.48	1	201.48	14.56	$<.05$*
SP	4.80	1	4.80	0.35	n.s.
SC	6.31	1	6.31	0.46	n.s.
PC	19.91	1	19.91	1.44	n.s.
SPC	10.00	1	10.00	0.72	n.s.
Residual	1,743.28	126	13.83		
Total	2,367.47	151			

[a] The main treatment categories are:
S = Skill Development courses
P = Personal Development courses
C = Counseling-Advising
* Significant at $<.05$ level

TABLE 4.18

MEAN NUMBER OF COURSES ATTEMPTED FOR MAIN AND INTERACTIVE EFFECTS OF EIGHT TREATMENT GROUPS[a]

		C	$\overline{C}$	Totals	
S	P	8.47	6.79	S=7.13	
	$\overline{P}$	7.68	5.58		P=7.76
$\overline{S}$	P	8.63	7.16	$\overline{S}$=7.75	$\overline{P}$=7.11
	$\overline{P}$	9.57	5.63		
Totals		8.59	6.29		

[a] There are 19 matched students in each of 8 treatment groups.

TABLE 4.19

THE NUMBER OF SUBJECTS, MEANS, VARIANCE, AND STANDARD DEVIATION OF THE VARIABLES: 1) RETENTION RATE: 2) UNITS ATTEMPTED; 3) UNITS COMPLETED; 4) TOTAL COURSES ATTEMPTED: 5) TOTAL COURSES COMPLETED; 6) GRADE POINT AVERAGE: 7) SKILL DEVELOPMENT COURSES TAKEN: 8) PERSONAL DEVELOPMENT COURSES TAKEN; 9) TOTAL OF OTHER COURSES TAKEN; 10) AGE; 11) SEX; 12) RACE; 13) READING SCORE: 14) EDUCATIONAL GOAL; 15) NUMBER OF SEMESTERS TO COMPLETE GOAL: 16) NUMBER OF COUNSELING-ADVISING APPOINTMENTS (N=1,760)

Variable	1*	2*	3*	4*	5*	6*	7*	8*	9*	10	11	12	13	14	15	16*
N	1760	1760	1760	1760	1760	1760	1760	1760	1760	1760	1760	1760	1107**	1760	1760	1760
Mean	.58	17.15	11.46	6.51	4.41	1.89	.43	.17	5.91	23.63	1.46	1.90	40.13	3.88	1.91	.37
Var.	.15	107.72	112.06	15.45	15.86	1.74	.77	.31	14.20	93.01	.25	.09	705.91	5.78	.10	.82
S.D.	.39	10.38	10.59	3.93	3.98	1.32	.88	.56	3.77	9.64	.50	.30	26.57	2.40	.31	.90

*2 semesters

**Those with reading scores

courses completed; 6) grade point average; 7) number of Skill Development courses taken; 8) number of Personal Development courses taken; 9) total number of other courses taken; 10) age; 11) sex; 12) race (white or nonwhite); 13) reading score; 14) educational goal; 15) number (one or more than one) of semesters to complete goal; 16) number of Counseling-Advising appointments.

A correlational matrix representing the degree of relationship between retention rate and independent and control variables represented in table 4.19, is displayed in table 4.20. Given the large number of subjects (N=1,760) and types of variables in the analysis, correlations of .26 or higher are considered to be of statistical significance.

Retention rate intercorrelates most highly with grade point average, units completed, and courses completed, in that order. Some relationship also exists with courses attempted, courses other than Skill and Personal Development taken, units attempted, and reading scores. There was very little or a negative relationship between the number of Skill and Personal Development courses taken, age, sex, race, educational goal, length of time to complete the educational goal, number of counseling appointments, and a student's retention rate.

Subsidiary Research Question Three. Was there a point of diminishing return as a result of saturation where increased participation resulted in little or no increase in retention rates (tables 4.21 through 4.25)?

When the number of Counseling-Advising appointments, and Personal and Skill Development classes were correlated with retention rate, there was no statistically significant difference between

TABLE 4.20

INTERCORRELATIONS AMONG THE FOLLOWING 16 VARIABLES: 1) RETENTION RATE: 2) UNITS ATTEMPTED: 3) UNITS COMPLETED; 4) COURSES ATTEMPTED; 5) COURSES COMPLETED; 6) GRADE POINT AVERAGE: 7) SKILL DEVELOPMENT COURSES TAKEN: 8) PERSONAL DEVELOPMENT COURSES TAKEN: 9) OTHER COURSES TAKEN; 10) AGE; 11) SEX; 12) RACE; 13) READING SCORE; 14) EDUCATIONAL GOAL; 15) NUMBER OF SEMESTERS TO COMPLETE GOAL; 16) NUMBER OF COUNSELING-ADVISING APPOINTMENTS (N=1,760)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16*
1	1.00	.36	.70	.37	.69	.84	.01	.10	.37	.10	.02	.06	.26	-.10	-.06	.17
2		1.00	.85	.95	.82	.33	.22	.02	.94	-.40	-.08	-.04	.20	-.45	.24	.32
3			1.00	.82	.97	.59	.13	.04	.81	-.26	-.03	.00	.27	-.37	.15	.32
4				1.00	.86	.35	.28	.13	.96	-.36	-.05	-.03	.13	-.39	.22	.32
5					1.00	.60	.17	.13	.84	-.24	-.02	.01	.22	-.34	.14	.33
6						1.00	-.04	.11	.35	.16	.07	.06	.32	-.09	-.07	.16
7							1.00	.18	.03	-.08	-.01	-.05	-.28	-.03	.06	.09
8								1.00	-.05	-.02	.03	.03	-.07	.04	.01	.12
9									1.00	-.36	-.06	-.03	.22	-.41	.21	.30
10										1.00	.12	.06	.04	.33	-.23	-.09
11											1.00	.04	.03	.03	-.03	.01
12												1.00	.08	.03	-.05	-.05
13													1.00	-.19	-.05	.02
14														1.00	-.21	.17
15															1.00	.07
16																1.00

*CA appointments same as CA weights

TABLE 4.21

ANALYSIS OF VARIANCE TABLE FOR NUMBER OF SKILL AND PERSONAL DEVELOPMENT COURSES TAKEN, COUNSELING-ADVISING APPOINTMENTS, AND RETENTION RATE

Source	SS	df	MS	F	p
Skill Development	.76	7	.11	.72	n.s.
Personal Development	2.63	5	.53	3.51	$<.05$*
Counseling-Advising	10.09	9	1.12	7.69	$<.05$*

*significant at $<.05$ level

TABLE 4.22

RESULTS OF LINEAR AND CURVILINEAR CORRELATIONS BETWEEN SKILL DEVELOPMENT COURSES TAKEN, COUNSELING-ADVISING APPOINTS, AND RETENTION RATE

Source		
Skill Development	curvilinear linear	.054 .010
Personal Development	curvilinear linear	.100 .099
Counseling Advising	curvilinear linear	.195 .173

a curvilinear and linear relationship as measured by Pearson and eta coefficients (tables 4.21 and 4.22). Where the variance ratio for Counseling (F=7.69) and Personal Development courses (F=3.51) were statistically significant, it was not so for Skill Development courses (F=0.72).

Analysis indicates a linear relationship suggesting there is no deceleration of retention rates (diminishing returns) with an increase

TABLE 4.23

MEAN RETENTION RATES* FOR THE NUMBER OF COUNSELING-ADVISING APPOINTMENTS

Number of Appointments	Mean Retention Rate	Number of Subjects
0	.54	1,358
1	.69	268
2	.72	74
3	.83	29
4	.85	16
5	.72	7
6	.70	5
7	.87	1
8	0.00	0
9	1.00	1
10	0.00	0
11	1.00	1

*F value = 7.69 (significant at $<$.05 level)

TABLE 4.24

MEAN RETENTION RATES* FOR THE NUMBER OF PERSONAL DEVELOPMENT COURSES TAKEN

Personal Development Courses Taken	Mean Retention Rate	Number of Subjects
0	.57	1,564
1	.64	129
2	.69	50
3	.81	9
4	1.00	1
5	.92	7

*F value = 7.69 (significant at $<$.05 level)

in student service participation. The small N of the "higher numbered" frequencies precludes making any definitive statement

TABLE 4.25

MEAN RETENTION RATES FOR THE NUMBER OF SKILL DEVELOPMENT COURSES TAKEN

Skill Development Courses Taken	Mean Retention Rate	Number of Subjects
0	.58	1,276
1	.61	318
2	.54	106
3	.57	30
4	.64	17
5	.64	9
6	.94	2
7	.52	2

*F value = 0.72 (no statistical significance)

about a diminishing retention rate in view of increased student service participation. Although a nonlinear relationship may exist, it has not been tested because of the small number of subjects reported in the higher frequencies as represented in tables 4.23-4.25. Scattergrams of these relationships graphically depict the linear relationship represented in tables 4.23, 4.24, and 4.25 in figure 3.

Subsidiary Research Question Four. How did students who completed (tables 4.26-4.31), as contrasted to those who attempted (tables 4.13-4.18), Skills and Personal Development courses and/or participated in Counseling-Advising differ according to the number of units completed, number of courses completed, and retention rate?

The first analysis of variance (tables 4.13 through 4.18) was applied to students who attempted either Skill or Personal Development courses and had a counseling appointment, or a combination thereof.

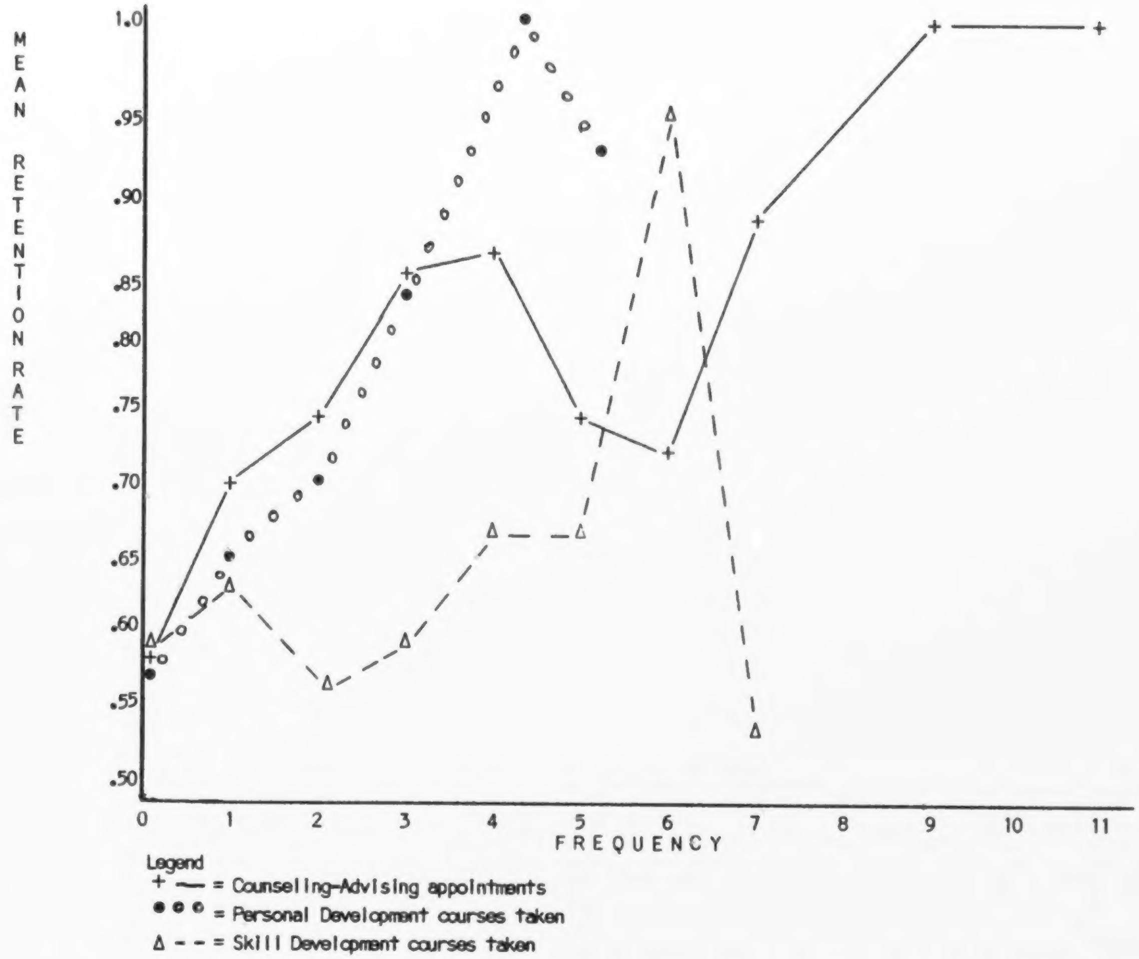

Fig. 3. Scattergram of relationships between number of Counseling-Advising appointments, Personal and Skill Development courses taken and retention rate.

To determine if there were statistically significant differences between main and interactive effects of those who completed either Skill or Personal Development courses and participated in counseling, a second analysis was employed. Each student was matched on reading scores, so that each student had a mate in each of the seven remaining groups. There were thirteen students in each group. The analysis of variance fby units completed (tables 25 and 26), courses completed (tables 27 and 28), and retention rate (tables 4.30 and 4.31) for those who completed Skill Development and/or Personal Development courses are listed below.

As indicated in tables 4.26 and 4.28, Counseling-Advising was significant at $<.05$ level on units and courses completed. Neither Skill or Personal Development courses had a significant impact on retention rate. Table 4.30 indicates retention rate approaches statistical significance (F=3.96) with an F value of 3.42. With only 13 students per treatment cell, there was not enough power to detect small gains.

Tables 4.27 and 4.29 show Counseling-Advising having the highest means for units completed and courses completed. Lowest means on these two scales were held for those students who participated in Skill Development courses only. Mean rates for retention (table 4.31) were highest for Counseling-Advising, with Skill Development and without Personal Development courses and without Skill Development courses with Personal Development courses. The lowest means were ascribed to those students who did not participate in any of the independent variables (.65), with those who participated in Skill Development courses only close behind at .66.

Statistical significance was not, therefore, reached by those who attempted Skill and Personal Development courses, but narrowly missed being significant for those who completed such courses. Counseling was the only statistically significant factor for units and courses completed for those who attempted, as well as completed, Skill and Personal Development courses. For the sample tested, the means of those students attempting and completing courses of the independent variable consistently pointed out Counseling-Advising as a significant force related to retention rate, while Skill Development courses were even less significant than doing nothing.

TABLE 4.26

ANALYSIS OF VARIANCE TABLE FOR UNITS COMPLETED FOR STUDENTS COMPLETING SKILL AND/OR PERSONAL DEVELOPMENT COURSES AND PARTICIPATING IN COUNSELING-ADVISING

Source	SS	df	MS	F	p
Blocks	2,109.03	12	175.75	2.10	n.s.
Treatments[a]					
C	1,006.25	1	1,006.27	12.06	<.05*
S	4.04	1	4.04	.05	n.s.
P	5.31	1	5.31	.06	n.s.
CS	68.66	1	68.66	.82	n.s.
SP	67.04	1	67.04	.80	n.s.
CP	105.01	1	105.01	1.25	n.s.
CSP	15.77	1	15.77	.19	n.s.
Error	7,091.90	85	83.43		
Total	10,473.63	103			

[a] The main treatment categories are:
C = Counseling-Advising
S = Skill Development courses
P = Personal Development courses
* Significant at <.05 level

TABLE 4.27

UNITS COMPLETED MEANS FOR STUDENTS[a] WHO COMPLETED SKILL AND/OR PERSONAL DEVELOPMENT COURSES AND PARTICIPATED IN COUNSELING-ADVISING

		C	$\overline{C}$	Totals	
S	P	21.50	19.69	S=19.57	
	$\overline{P}$	22.23	14.85		P=19.99
$\overline{S}$	P	22.69	16.08	$\overline{S}$=19.96	$\overline{P}$=19.54
	$\overline{P}$	25.08	16.00		
Totals		22.88	16.65		

[a] There are 13 matched students in each of 8 treatment groups.

TABLE 4.28

ANALYSIS OF VARIANCE OF COURSES COMPLETED FOR STUDENTS COMPLETING SKILL AND/OR PERSONAL DEVELOPMENT COURSES AND PARTICIPATING IN COUNSELING-ADVISING

Source	SS	df	MS	F	p
Blocks	338.90	12	28.24	2.37	n.s.
Treatments[a]					
C	172.66	1	172.66	14.48	$<.05$*
S	3.12	1	3.12	.26	n.s.
P	28.04	1	28.04	2.35	n.s.
CS	15.38	1	15.38	1.29	n.s.
SP	12.46	1	12.46	1.04	n.s.
CP	12.46	1	12.46	1.04	n.s.
CSP	.04	1	.04	.00	n.s.
Error	1,013.13	85	11.92		
Total	1,596.16	103			

[a] The main treatment categories are:
S = Skill Development courses
P = Personal Development courses
C = Counseling-Advising
*Significant at $<.05$ level

TABLE 4.29

COURSES COMPLETED MEANS FOR STUDENTS[a] WHO COMPLETED SKILL AND/OR PERSONAL DEVELOPMENT COURSES AND PARTICIPATED IN COUNSELING-ADVISING

		C	$\overline{C}$	Totals	
S	P	9.07	7.92	S=7.64	P=8.33
	$\overline{P}$	8.00	5.54		
$\overline{S}$	P	9.46	6.85	$\overline{S}$=7.98	$\overline{P}$=7.29
	$\overline{P}$	9.84	5.76		
Totals		9.10	6.52		

[a] There are 13 matched students in each of 8 treatment groups.

TABLE 4.30

ANALYSIS OF VARIANCE OF RETENTION RATE FOR STUDENTS COMPLETING SKILL AND/OR PERSONAL DEVELOPMENT COURSES AND PARTICIPATING IN COUNSELING-ADVISING

Source	SS	df	MS	F	p
Blocks	1.66	12	.138	1.97	n.s.
Treatments[a]					
C	.24	1	.24	3.42	n.s.
S	.02	1	.02	.28	n.s.
P	.10	1	.10	1.42	n.s.
CS	.0+	1	.0+	0.00	n.s.
SP	.0+	1	.0+	0.00	n.s.
CP	.06	1	.06	.86	n.s.
CSP	.03	1	.03	.43	n.s.
Error	5.95	85	.07		
Total	8.06	103			

[a] The main treatment categories are:
C = Counseling-Advising
S = Skill Development courses
P = Personal Development courses

TABLE 4.31

MEAN RETENTION RATES FOR STUDENTS[a] WHO COMPLETED SKILL AND/OR PERSONAL DEVELOPMENT COURSES AND PARTICIPATED IN COUNSELING-ADVISING

		C	$\overline{C}$	Totals	
S	P	.80	.80	S=.77	P=.79
	$\overline{P}$	.83	.66		
$\overline{S}$	P	.83	.73	$\overline{S}$=.75	$\overline{P}$=.73
	$\overline{P}$	.77	.65		
Totals		.81	.71		

[a] There are 13 matched students in each of 8 treatment groups.

Discussion

Of the 1,760 first-time students who began Sierra College in the Fall semester of 1981, 1,111 returned for the Spring of 1982, representing a complete withdrawal rate for the first semester of 37 percent. Of the 1,111 who returned for the second semester, 191 enrolled in one or more courses but failed to complete any of them. If it could be presumed these 191 students failed to return for the second year, a total of 840 (52%) of the original population would have dropped out at the end of the first year. Of the 649 who failed to return for the second semester, 421 (65%) failed to complete a single class in the first semester and ended with a zero retention rate. The other 228 who failed to return for the Spring, 1982, semester completed one or more courses and established a retention rate greater than zero.

This study supports findings of previous research regarding factors of the control variables on student characteristics. A descriptive analysis of these personal and educational demographic data reveals the dropout students are more apt to be older, over thirty years of age. For the sample studied, they attempt and complete fewer courses, have only slightly lower retention rates and grade point averages, and are either Hispanic or Caucasian. Most did not have a degree or transfer major. They indicated their intent was to pursue a recreational/personal educational objective or were taking a course to upgrade job skills. They designated their intention of taking only one semester to fulfill their objective, suggesting a lessened commitment to any long-term educational goal. These factors strongly suggest that the student who drops out either has a vague or uncertain dedication to educational objectivesor completed his/her goal. Consequently, they may have achieved their educational goal and should not be considered a dropout. In such instances, the college would have partially met one of its missions.

Though there is no empirical evidence to support the contention, there appears to be three large and quite distinct groups on the community college campus. The three groups are believed to be day students, evening students, and those needing compensatory education for remdial and developmental skill building. If they exist, it is suggested these groups may require quite different standards for evaluating student and college "success." If there are different populations, modal profiles representing a "single" population can be misleading, and disguise and misrepresent the reality of the subpopulation.

Those who dropped out were less likely to have attended orientation or seen a counselor, both of which this study suggests have a significant bearing on retention. Perhaps the student most inclined to drop out is predispositioned to do so because of personal, psychological, or motivational factors. The dropout is most often that student who was a late applicant and admitted after orientation and advising were finished. Thus, they do not benefit from tips in how to survive in college, do not know where to go for specific help, are not tested for appropriate placement/advising for skills or appropriate courses, and have not had the benefit of a counselor's assistance in course selection and entry.

This study failed to find an interactive effect of factors of the independent variables and retention rate. The main effects of Counseling-Advising, Skill Development and Personal Development courses were entered into an analysis of variance, and only Counseling-Advising consistently revealed statistically significant effects on the measure of retention rate.

On a correlational matrix, positive relationships were found between Skill and Personal Development courses and retention rate. It is hypothesized it is due to Counseling and Advising effects that resulted in these course placements. These relationships did not hold up on analysis of variance, however, and served as the rationale for not pursuing a stepwise multiple regression.

It is suggested that students enrolled in Skill Development courses represent a subsample of students who lack fundamental learning skills and are a very high educational risk to begin with. This may, in part, account for the fact that Skill Development had less of an impact on retention rate than no treatment at all. It is suspected that retention rate for this group of students would have been much lower had there been no Skill Developement courses. There was some indication that Personal Development courses showed some relationship to retention rate. What would the retention rate have been had it not been for these courses?

This study supports the contention that Counseling-Advising is effective in increasing retention. When the 1,760 students were studied, a statistically significant relationship was found between Counseling-Advising and Personal Development courses taken. This may be due to the effect of the counseling which results in Personal Development course placements. When analysis of variance was performed, Personal Development course placement disappeared as a statistically significant factor. The large sample size is another possibility why Personal Development was significant in the original analysis.

Even though Counseling-Advising appointments involved fewer students and had less weight compared to Skill and Personal Development courses, those who saw a counselor attempted and completed more classes and had a higher grade point average and retention rate than those students who did not. This supports the theory that these students were more involved, committed, and interactive with the institution on a higher plain than those who do not see a counselor.

Counseling is theorized to maximize the "fit" between the student and institution, because it is "flexible" and can adjust the student's expressed needs to institutional resources. In this sense, counseling on a one-to-one basis becomes an intervening catalyst of "immediate" and "personalized" adjustments on behalf of the student in the form of what courses and instructors are best suited to meet a particular goal. The counseling environment projects "caring" perceived by the student as a concern for his or her welfare--a condition of commitment and retention.

Skill and Personal Development courses are limited to assisting the student in one aspect of the learning process. Often the courses carry a negative connotation to the development of a positive self-concept. A college student taking remedial reading, arithmetic, or spelling courses often has difficulty resolving the differences between expectations of being a college student and taking courses on an elementary school level.

Personal Development courses are narrower than counseling in their approach to adjustment and development while dealing with complex personal and behavioral functions such as value clarification, self-awareness and acceptance. These endeavors are pursued on a short-term basis, often only nine weeks in duration, and require a longer period of time to realize growth. In the meantime, the student is confronted daily with the dynamic demands and decisions of academic and social interactions.

Therefore, a self-concept and personality characteristics made up of factors other than those normally related to being a college student, may be predictive of dropping out and manifested as lack of commitment, involvement, interaction, and possibly a feeling of "isolation."

Perhaps the institutional environment at Sierra College leads to minimal interaction and concern about students relative to student-faculty and student-institution relationships. As suggested in earlier models, this could lead to a lessened or poor quality of "fit" between the students and institution leading to increased attrition. This concern will be addressed in Chapter Five.

With a large enough sample, virtually any difference is statistically significant, as witnessed by age in this study. However, practical significance is more worthwhile in making adminstrative judgments and decisions based on realistic findings that may not be statistically significant. "Administrative significance" for this study focused on the units completed or retention rate and its relationship to program and cost effectiveness.

Student development programs and activities were evaluated to determine if they were cost effective. Retention rates for the three factors of student services in this study were translated to increased retention which resulted in more student contact hours (average daily attendance, ADA) and the resultant state income based on ADA.

From the sample of 1,760 students, 402 saw a counselor at least once. As seen in table 4.16, those who saw a counselor completed 5.24 (21.49 less 16.25) more units than the 1,358 who did not. The 5.24 units can be treated as instruction hours; a one-to-one conversion being conservative. Multiplying the number of students (402) by the unit differential of 5.24 produced a total of 2,107 weekly student contact hours (WSCH).

Weekly student contact hours are used to determine average daily attendance (ADA), the basis for state revenues. The formula for converting WSCH to ADA is: $\frac{\text{WSCH}}{30} \times .911$, or $\frac{2,107}{30} \times .911 = 64$ ADA. In the 1981-1982 school year, the Sierra College District was reimbursed by the State of California at the rate of $1,948 for each ADA. The 64 ADA (1.08% of the total ADA) generated by the increased number of units completed as a result of Counseling-Advising for the 402 students alone increased Sierra College District revenues by $124,672.

The total 1981-82 expended program budget for counseling was $269,429 of which $227,869 was committed solely to counselors' salaries. The $124,672 represents 46.27 percent of the total budget and 54.71 percent of the counselors' salaries.

This study shows that student services were cost effective, based on increased retention rates, particularly Counseling-Advising and Orientation. Individual courses contained under the headings of Skill and Personal Development must be studied individually to determine their individual impact on retention and subsequent cost effectiveness. Recommendations for further action will be offered in Chapter Five.

CHAPTER V

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

Summary

A major goal of student development programs is to provide professional assistance to students in achieving their goals. There is evidence indicating individual activities of such programs increase retention. There is little research available to indicate the main and interactive effects of these student service activities. The major purpose of this study was to determine whether student participation in selected activities of a student development program had an effect upon retention rates at a rural community college.

A causal-comparative *ex post facto* method employing descriptive, correlational, and analysis of variance procedures was designed to measure the effects of the independent (selected student development activities) and control variables (student characteristics) on the dependent variable (retention rate). Retention rate was determined as the difference of the units of all course work attempted and the number of units of course work not completed for a passing grade, divided by the total number of units attempted, rather than a failure to complete a degree or return to college.

As shown in this study, the partial dropout accounted for greater losses in ADA revenues than those totally withdrawing after one or two semesters. This administratively significant factor is even more important and deserves greater attention if those who failed to return completed their educational goal.

The independent variable contained data on the number of individual Counseling-Advising appointments with students, Skill Development courses for reading, arithmetic, and study skills. Personal Development courses oriented toward individual growth re-entry, assertiveness, career decision making, and college survival were also factors of the independent variable.

Control variables (student characteristics) measured were: (1) age; (2) sex; (3) race; (4) student's educational goal; (5) whether a two-year or four-year major; (6) the length of time the student intended to take in completing the goal; (7) Nelson-Denny Reading Test (Form D) score; and (8) the college grade point average.

The population studied was composed of the first-time students who initially enrolled in the Fall, 1981, semester at Sierra College, a rural two-year public community college in Northern California. The students were studied over the Fall, 1981, and Spring, 1982, semesters. For inclusion in the study, students had to meet the following criteria: (1) had never attended college before; (2) had attended the Sierra College, Fall, 1981, orientation-advising program; and (3) had recorded reading placement scores.

Of 2,902 new students in the Fall of 1981, 1,864 were day and 1,036 were evening enrollees. After eliminating certain students who did not meet the above criteria, a population of 1,760 students with and without reading scores was retained. Of that number, a sampling frame of 1,107 students with reading scores was studied by using a randomized blocked design for analysis of variance of main and interaction effects of the independent variable on retention rate. Students were matched on reading scores for each of eight treatment groups representing the main and interaction effects. These procedures were also applied to matched groups of those who attempted and completed Skill and Personal Development courses and participated in Counseling-Advising.

Vincent Tinto's theory of interaction and his model for dropping out from college were used as basic conceptual foundations to the approaches and research questions represented in this study. One major and four subsidiary research questions were formulated to investigate the phenomena of retention. A descriptive overview of the population studied showed that: (1) of the original 1,760 students, 649 (37%) failed to return for the second semester and approximately another 200 failed to continue after the second semester, representing a first-year attrition rate of 52 percent; (2) the dropout was likely to be over 30 years of age, a female, and Hispanic or Caucasian; (3) those dropping out attempted and completed fewer courses, had slightly lower retention rates and grade point averages; (4) the dropout is less likely to attend orientation or seek counseling-advising services; (5) most will have a nontransfer, occupational, or two-year degree objective; and (6) they declare their educational objective is to meet the needs of a personal/recreational nature or for upgrading job skills, requiring less time than degree programs.

Presented below is a restatement of the research questions that guided this research.

1. What was the individual and combined effect of the main and interactive relationships of selected student development

activities to retention rates in the Fall, 1981, and Spring, 1982, semesters for first-time, day students at Sierra College, a rural community college in Northern California? (Major Research Question)

The analysis of variance revealed statistically significant effects of Counseling-Advising on the measure of retention rate. There were no differences on Skill or Personal Development courses, nor did any of the interaction terms reach significance.

2. Did the main and/or interaction effects of participation in the selected development activities (Counseling-Advising, Personal and Skill Development courses) vary according to units completed and courses attempted? (Subsidiary Research Question Number One)

Counseling-Advising was the only factor to have a statistically significant ($p < .05$) effect on the number of units completed and courses attempted. The other main effects (Personal and Skill Development courses) or interaction effects showed no significance.

3. What was the relationship between selected independent and control variables and retention rate? (Subsidiary Research Question Number Two)

Retention rate was found to intercorrelate most highly with grade point average, units completed, and courses completed. Some relationship also exists with courses attempted, courses attempted other than Personal or Skill Development, units attempted, and reading scores.

There was no statistical significance between retention rate and sex, race, educational goal, length of time to complete the educational goal, and number of counseling appointments. Statistical significance was found between age and retention rate.

4. Was there a point of diminishing return as a result of saturation, where increased participation resulted in little or no increase in retention rates? (Subsidiary Research Question Number Three)

When the number of counseling appointments, and Personal and Skill Development course weights were correlated with retention rate, there was no statistically significant difference between a curvilinear and linear relationship. Increased participation in selected student development activities showed commensurate increase in retention rate.

5. How did students who completed, as contrasted to those who attempted, Skills and Personal Development courses and/or participated in Counseling-Advising differ according to the number of units completed, number of courses completed, and retention rate? (Subsidiary Research Question Number Four)

Those students who attempted and completed Skills and Personal Development courses showed no statistically significant effects on retention rate. However, in both instances, Counseling-Advising was shown to be significant ($p < .05$) related to increased numbers of courses and units completed.

When the main and interaction effects were tested, Counseling-Advising was the only factor of the independent variable to show any statistical significance to retention rate. In several instances, Personal Development courses produced F values that approached the .05 level of significance. However, it is not known if the strength of relationship is attributed to the courses themselves or the influence of the counselor who usually recommends students to take the courses.

Skill Development courses did not show a strong relationship to retention rate. Students enrolled in those courses may have been more educationally disadvantaged than other students, and matching on reading scores, purported to produce homogeneity in treatment groups, failed to control for those differences.

These effects remained consistent for the relationships between the independent and control variables and units completed and courses attempted. The interaction effects of factors of the independent variable failed to produce statistically significanct results.

As would be expected, of the sixteen factors of the control variable studied, the number of units and courses completed showed the highest intercorrelations with retention rate. Grade point averages also displayed high correlations. Lower correlations were found between retention rate and reading scores, units, and courses attempted, courses attempted other than Personal and Skill Development.

The above findings support previous research regarding student characteristics. Counseling-Advising was consistently found to be the factor accounting for increased retention rates. The study failed to elicit any interaction effect of three factors of the independent variable (Counseling-Advising, Personal and Skill Development courses). The research strongly suggests Counseling-Advising and Orientation increase the "fit" between the student and institution, producing an enhanced commitment, sense of belonging, and personal satisfaction.

Limitations

The results of this study are limited to a rural, day, first-time freshman class enrolling at Sierra College, a two-year community college, for the Fall semester of 1981, and returning for the Spring, 1982, semester. There is a generalizability that the year of 1981 is typical and the results are like other freshmen classes. Generalization of results are also limited to a predominantly white, middle-class constituency, approximately eighteen to twenty-five years of age. From the population of 1,864 day students, those with reading scores represented a frame of 1,107. Eight treatment groups were formed from this frame, from which 152 students were selected as a sub-sample of those attempting activities of the independent variable and another 104 students comprising the sub-sample of students who completed the activities.

Students with higher reading percentile scores were omitted from the above sub-samples because of the limited number of students in the upper range of reading scores in some of the treatment groups, and matches could not be made consistent with the criteria stated on page 77. In the first analysis with students who attempted Skill and Personal Development courses and saw a counselor, reading scores of the 77th percentile and higher were omitted. In the second analysis involving students who completed Skill and Personal Development courses and saw a counselor, reading scores over the 83rd percentile were excluded. In both instances, the lowest score was the first percentile. The lack of higher reading scores can skew the results and limits comparison.

As cognitive measures, reading scores are relative and would not normally meet the stringent requirements of reliability and validity in assessing intellectual ability. However, research has established very high correlations between reading ability and intelligence. Standardized scores of aptitude, interest, values, personality traits, and needs are neither required for admission nor available on all students. Such information could have added broader and richer descriptive dimensions to factors bearing on the study.

Counseling-advising appointments were combined rather than separated for Fall, 1981, and Spring, 1982, semesters. It was impossible to determine if some appointments made in the Fall were for that term or the Spring. Returning students were more apt to see a counselor more frequently since they were enrolled twice as long as those who did not re-enroll for the Spring semester.

The complex nature of human behavior eludes many researchers in measuring the impact of personal qualities on any criterion variable. It is conceivable that intervening variables regarding student behavior not assessed in this study may account for retention. It is not within the scope of this study to include them. Examples of potential intervening influences, subsystems of the students' total environment, are the home, peer group, community, classroom, and certain instructors.

By studying all first-time, day freshmen, the group is presumed to be normally distributed. The subjects represent all of those who enrolled for the first time at Sierra College in the Fall of 1981. Statistical techniques used in this study are robust in respect to normality because of the large sample sizes used. Frequency tallies were essentially normal distributions on all relevant variables. This also allows for generalizability to other years.

Certain student activities were not included in this study because adequate records were not available or they require twelve units to be eligible for participation and could skew the unit retention rate. The activities omitted were dormitory living, financial aid, health services, job placement, disabled student services, and cocurricular activities. Student development activities vary from college to college. Those activities either included or excluded, as noted, represent the scope of the student development program at Sierra College.

Action programs designed to understand and meet behavioral needs require psychological data about each student. Information about the student's needs, motivation, and so forth, was not available, again limiting the scope of significance. Neither was any attempt made to measure the quality of interfacings between the student and the college environment, nor the interactive process itself. These factors may account for the greatest variance in the behavioral decision to remain in college or to drop out and is subject for further study.

Students with the highest probability of dropping out are encouraged or advised into elements of the independent variable making less obvious the overall gains in retention. Lack of controls for randomized assignment to study groups as in an experimental design, versus students being advised or "selected" for assignment to Skill and Personal Development courses creates a problem. It is not known what retention rates these students would have established had they not taken the courses. It is suspected the retention rate would have been lower. It is not possible to state clearly the degree of increased retention for those participating in factors of the independent variable.

Since there was not a random assignment, the results must be interpreted in view of this fact and evaluated in terms of selection or treatment. The power of the design, however, and the minimal differences in matched reading scores are felt to compensate for this weakness.

Implications

Findings from this study have implications for Sierra College and other community college student development programs. It has been shown that Counseling-Advising and Orientation are cost effective in that the amount of ADA they preserve may offset the majority of costs to providee them. Results also indicate Skill and Personal Development courses need to be studied more closely to determine their collective impact on retention rates.

The retention rate formula devised for this study was a more refined measure detecting those withdrawing from one or more courses as well as those who dropped all courses (zero retention rate). From the original 1,760 students, 649 did not return for the second semester. Based on the average of 9.82 units attempted by each student (table 4.7), the 649 represent a loss of 6,373 units or weekly student contact hours (WSCH). This would amount to 97 average daily attendance ($\frac{WSCH}{30} \div 2 \times .911 = ADA$). At the rate of $1,948 per unit of ADA, the financial loss amounted to $188,956.

A retention rate of .62 (table 4.9) for 1,760 students amounts to a loss of 6,568 units (1,760 students x 9.82 units x .38 attrition) which converted to WSCH results in a loss of 100 ADA, or $194,800 in revenue.

The above examples clearly indicate both forms of attrition represent considerable losses in revenue. The largest loss was produced by those who completed only a portion of their courses. These losses would be undetected in most retention-attrition studies where complete withdrawal or failure to achieve a degree is the criteria defining a dropout.

Any intervention program reducing both partial (100 ADA) and complete dropout (97 ADA) losses by a mere 10 percent would increase ADA by 19.7 and revenue by $38,376. A retention strategy applied to the total enrollment of 11,150 which reduced attrition by 10 percent would increase annual revenues by approximately $832,000. The value of intervention strategies to increase retention is clearly demonstrated using the findings of this study.

A statistical relationship was found between retention rate and age to imply maturity leads to greater perseverence in courses attempted when measured on a semester basis. The dropout profile would suggest those who left college after one semester may not have had a long-term goal requiring more time. When they completed their objective, they left college. Perhaps attrition is not as great a problem as perceived. Students leavings after completing a short-term goal, cannot be classified as "attriters." The community college may have met its mission for these students. No statistical significance was found between retention rate and the other factors of the control variables. It was found that attrition within the semester, as measured by retention rate, had a greater impact on lost revenues than did the failure of students to return for the Spring, 1982, semester.

Increased participation in factors of the independent variable was represented by commensurate increase in retention rates for Counseling-Advising and Personal Development courses. Skill Development courses also produced linear relationships to retention rate, though of lesser magnitude.

This study showed that something can be done about increasing retention rates. There are no policies, action programs, or discussions about retention strategies at Sierra College, and the activities studied, as well as the staff who perform those duties, have no stated or implied goal of increasing retention. However, there is a statement and commitment to assisting the student in clarifying and successfully completing his/her personal goal in a caring atmosphere. Is it possible that this is the secret to improved retention?

If appointments with seven counselors for 402 students was responsible for $125,000 in increased revenues in one year, imagine what a faculty advising program with 130 full-time instructors could do if the same attitude and commitment toward students was manifested. Using the ratio of counselors to increased revenue as a basis, a counselor lead, faculty supported advising program of equal effectiveness with 130 full-time instructors could increase District revenues by a considerable amount.

The findings of this study suggest an institutional policy of commitment to improve the college environment by attempting to meet student needs and increase the quality of fit between both.

Interventive action programs to increase retention rates should be expected and will require the coordination collaboration, commitment, and support of the District's constituents, the Board of Trustees, administration, faculty, staff, and students.

The study also has ramifications for institutional research to develop an awareness of the magnitude of the problem, possible causes, and suggested remedies. An adequate data base of a wide range of elements, staff, and resources is needed to perform important longitudinal and in-depth research, follow-up studies, interviews, and other approaches to data gathering and analysis of factors related to retention. A consortium of community colleges could be established whose interest and function would be to perform such research with a multiinstitutional population for greater generalizability.

Retention rates for individual faculty members, departments, feeder high schools, and the whole college should be implemented to determine where improvements are needed as well as exemplary activities that could serve as models for others.

As suggested in the theoretical models of this study, the faculty and academic programs, and the student personnel staff and activities must come together to provide a better fit between the student and institution. This is a joint responsibility where the academic and personal needs of the student are given equal importance and consideration, for one enhances the other. The synthesis of these two concerns and those responsible for their achievement is necessary to educate one another while becoming more understanding and supportive of one another's needs and efforts. In this sense, everyone becomes a retention change agent in the partnership to create a better environment for all while increasing retention.

Orientation programs, both prior to enrolling and during the first year of college, appear to have merit in preparing and meeting the students' needs in adjusting to college. In addition to familiarizing students with college, it is an opportunity to collect additional data from students to develop better predictive models for dropping out. The activity also affords the students an opportunity to discuss vocational-educational goal setting, values, study skills, and course selection to meet personal goals. Orientation should improve the interfacing of the student to the college and would be best implemented as a systematic, developmental series of activities over a period of time. The program could be specialized to meet the unique needs of students. Examples of such students would be those transferring, those without a major, and the older student.

Pre-admission assessment could make a positive and beneficial contribution to increase retention rates. Knowledge of a student's abilities, interests, values, and past academic performance could serve as an element of the integrated research program to develop prescriptive course advising. As an example, high risk students may be limited in the number and type of courses they can attempt while being required to take specified courses to compensate for a deficiency such as reading.

Counseling-Advising has been shown by this study to increase retention and District revenues. Consequently, prescriptive Counseling-Advising deserves consideration. This would be particularly true of high risk students and all students during their first semester or year, the time of greatest attrition. The results of this study verifies the wisdom of continued and increased moral and fiscal support.

Students might expect to be more knowledgeable about factors predisposing dropping out. They should be able to compare personal data from pre-admission assessment and orientations to this profile and evaluate the areas they might expect to find problematic and their overall chances of completing their goal. With Counseling-Advising assistance, they can take positive action toward the probability of determining a realistic goal and reaching their educational-vocational objectives. They may also leave college as the most realistic or best decision for themselves. All students could expect an environment distinguished by an attitude of concern for the welfare of students, more structure or prescriptive policies, and an expectation that their needs will be met.

It is important to emphasize that not all students who fail to return for the second or subsequent semesters are dropouts. There may be a variety of forms of attrition prompted by a variety of reasons that are appropriate and healthy and serve the best interests of the student and college. These students often complete their educational goal without acquiring a certificate or degree or transferring to a four-year institution. There are some who have not met their goal but temporarily "stop out" for a variety of reasons and return later as a re-entry student to complete their goal.

The majority of California community college students attend on a part-time basis and progress toward their goals at different rates because more flexibility and diversity is allowed in the California community colleges. These students should not be hastily labeled dropouts. A more thorough analysis of students who leave may reveal a large number of those who are invalidly labeled a dropout actually completed or will return later to complete their educational goal and these students have had their needs met by the community college mission.

The implications for educational policy resulting from this study are vast. Educational policymakers include legislators, the California Community College Chancellor's Office, the California Post-secondary Education Commission, the Sierra Joint Community College Board, faculty unions, student government association, college administration, and staff. With proper information, these policymakers can influence legislation, research, program development, resource allocations, accountability, motivation, and a positive attitude toward increasing community college retention rates.

This study and related research suggests that institutions can do something about increasing retention rates. Improved knowledge, positive attitudes, and firm commitments to intervening action plans for such purposes can benefit everyone associated with the college. Improved instruction, student-faculty and student-institution relationships, counseling-advising, and student development activities are realistic and educationally sound goals to seek in pursuit of increased retention rates. Interventive and preventive action programs are needed to increase retention and income at Sierra College, and warrant the necessary financial and institutional support to develop and implement those programs.

Recommendations

This study suggests several recommendations for Sierra College in particular, community colleges in general, and future research. They are:

1. Additional research on the effects of Skill and Personal Development courses and retention is needed. Individual courses need to be differentiated to determine if certain courses are more effective than others.

2. More information about students who attend and leave Sierra College is needed. This study was limited by the lack of historical, personal, and follow-up information on students. An assessment program should be implemented to give more pertinent student information related to retention such as parental values about college, high school performance, and aptitudes.

3. More intensive studies of interactions between the student and the institution and its staff like those of Spady,[1] Tinto,[2] Pascarella and Terenzini,[3] and Alfred[4] are critical to ascertaining the problematic areas leading to attrition.

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[1] William G. Spady, "Dropouts from Higher Education: Toward an Empirical Model," Interchange 2 (1971):38-62.

[2] Vincent Tinto, "Dropouts from Higher Education: A Theoretical Synthesis of Recent Research," Review of Educational Research 45 (Winter 1975):89.

[3] Ernest T. Pascarella and Patrick T. Terenzini, "Patterns of Student-Faculty Informal Interaction Beyond the Classroom and Voluntary Freshman Attrition," Journal of Higher Education 48 (1977):540.

[4] Richard L. Alfred, "A Conceptual Investigation of Student Attrition in the Comprehensive Community College," Paper presented at the annual convention of the AERA, Chicago, April 1974.

4. Once determined, proactive or interventive programs based on adequate and accurate information to reduce retention, are in order. This would follow an institutional commitment and necessary policy to ensure their success.

5. Research including student characteristics or other control variables appear inadequate to predict or prevent attrition. The dropout phenomenon is too complex to be explained in such simplistic terms. Studies of personality characteristics such as those by DeVecchio, Hannah, Brawer, and Munro reported earlier in this study must be included to understand the true dynamics of dropout behavior, not merely the socially acceptable reasons given such as the need to work or other rationale.

6. Intervention programs to increase student involvement are necessary. As strongly suggested by this study, mandatory orientation and individual Counseling-Advising might be given serious consideration for new students. Such a program would provide an opportunity for additional assessment and assistance in developing preventative strategies as indicated earlier.

Programs to increase retention are varied and numerous. Any approach to increase retention rates must be shaped to meet the nature of the problem. This suggests a multifaceted approach to increasing retention rates is required to meet the wide range of needs exhibited by the diverse community college population. While not practical to list all known programs, it is pertinent to cite references to several noteworthy retention strategies.

As shown in this study, orientation and counseling-advising effectively interfaced the student with the college, leading to increased retention. It is strongly recommended orientation be mandatory for new students who are taking six or more or have completed six units. There must be a purposeful relationship between the student development and academic programs for one to complement the other. It is proposed counselors perform a leadership role in this function since they are the most uniquely qualified and specialized professional to assist, train, coordinate, and integrate the students and staff to work out complex personal, social, academic, vocational, and educational problems.

Counselors have a responsibility to exercise initiative and leadership in the planning, development, and implementation of meaningful and appropriate programs and activities to enhance the campus environment. In addition to activities listed in this study, they could provide in-service training to staff and enlist their support in the functions of outreach to feeder high schools, business, and the community at large. The rationale and process of assessment, evaluation of entrance exams and past academic records, and course placements could lead to an increased and improved educational delivery system. The counselor would serve as an invaluable institutional resource in the development of faculty and paraprofessionals to extend and expand the benefits of counseling-advising.

Counselors should operate as catalysts to integrate financial aid, job placement, housing, testing, health services, and student activities into the proposed in-service training program. They could play a significant role in bringing together the varied subgroups of the total college community to design programs that ensure an organized, smooth access to the institutional resources. They would serve to lead, develop, monitor, and provide a continuity from outreach activities, to campus involvement, to the meeting of a large number of varied goals of all those involved.

7. Student services are usually a group of individual services having little planned relationship to one another. There is rarely a philosophy or mission statement binding these activities together into a comprehensive, interrelated program. A unifying goal or purpose is needed to break down the "isolation" of each from the other. The mission must include an evaluation component.

Beal and Noel[1] mention successful action plans of a national survey as well as campus characteristics conducive to retention. The purpose of the study was to identify, analyze, and compile information about campus action programs and efforts for improving student retention in higher education. Laurence Smith[2] and others have produced an excellent guide to mobilizing the campus for retention. Patrick, Myers, and Van Dusen[3] have also produced an excellent manual of guidelines for conducting and undertaking studies in higher education. The results of the survey can be used to provide information to develop models that lead to early identification of the potential dropout and corrective action that can be taken. They also include information on the Student-Outcomes Information Services recommended for such studies.

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[1] Philip E. Beal and Lee Noel, What Works in Student Retention, The Report of a Joint Project of the American College Testing Program and the National Center for Higher Education Management Systems, Boulder, Colo, 1980.

[2] Laurence N. Smith, Ronald Lippitt, Lee Noel, and Dorian Sprandel, Mobilizing the Campus for Retention: An Innovative Quality of Life Model, The ACT National Center for the Advancement of Educational Practices, Iowa City, Iowa, 1981.

[3] Cathleen Patrick, Edward Meyers, and William Van Dusen, A Manual for Conducting Student Attrition Studies, National Center for Higher Education Management Systems, Boulder, Colo, 1979.

8. It is recommended that follow-up case studies of several randomly selected subjects of the various subpopulations be undertaken. These could be performed over periodic intervals of three to four years to determine the educational status, attitudes, values, and plans of those surveyed. It is suggested the following subgroups include full-time and part-time students; those with transfer, Associate of Arts degree, or certificate objectives; those taking courses for personal/recreational reasons; and evening students not included in this study.

As shown in this study, Counseling-Advising was effective in increasing student retention rates, which in turn increased college revenues. These results can serve as a basis for future investment in programs that assists students in identifying and realizing their personal goals. Programs developed and implemented to increase retention rates must be built upon a genuine concern for students' welfare and needs as well as improve the quality of the educational experience and environment for those students. Both are required to establish the tenor of a caring environment in which continued growth and development toward personal goals will be expected.

This enhanced interfacing will result in greater feelings of belonging and security, leading to a better fit between the student and the institution, culminating in increased District revenues. Retention programs to heighten human and capital investments will not only increase monies to be reinvested in the institution and its staff, they will also make the college a better place to work, learn, and grow, thereby benefiting everyone.

APPENDIX A

NELSON-DENNY READING TEST
(FORM D)

(Copies Available Through Publisher:

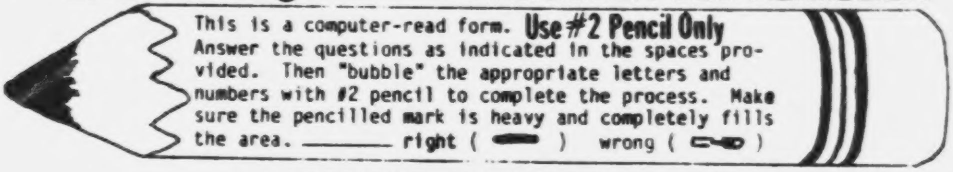
Houghton Mifflin Company
2 Park Street
Boston, Mass. 02108)

APPENDIX B

APPLICATION FOR ADMISSION

Sierra College

APPLICATION FOR ADMISSION



This is a computer-read form. **Use #2 Pencil Only** Answer the questions as indicated in the spaces provided. Then "bubble" the appropriate letters and numbers with #2 pencil to complete the process. Make sure the pencilled mark is heavy and completely fills the area. ________ right (▬) wrong (⊂⊃)

APPLICATION INSTRUCTIONS

1. Print your NAME (Last, First, and Middle Initial--separate each with commas). If there are not enough spaces for your entire name, please abbreviate. For those names with an apostrophe ('), see the example below:

O	B	R	I	E	N	,	M	A	R	Y	,	L			

2. Please mark only one SEMESTER -- the semester for which you are applying.

3. Disregard this item if you have never been enrolled in classes at Sierra College.

4. If you do not have a SOCIAL SECURITY NUMBER at the time you apply, leave this item blank. When you have applied for and received your social security number, please inform the Admissions Office staff.

5. Enter your complete MAILING ADDRESS, beginning with Number and Street (separating each with a space) and continuing with City, State, and Zip Code on the following page.

6. In marking your BIRTHDATE, a single-numbered day or year should be preceded by zero.

   In marking your BIRTHPLACE, use the United States and Possessions and Foreign Countries code numbers from the attached Code Sheet. See the examples below:

2 8 ☐	Nevada is 28	If United States or Possessions, use two-digit number from Code Sheet, leaving the third space blank.
4 7 2	Mexico is 000472	If a Foreign Country, use last three numbers of six-digit codes on the Code Sheet.

   If the code for your BIRTHPLACE does not appear on the Code Sheet, write your birthplace at the bottom of the page.

7-9. Self-explanatory.

10. For those names with an apostrophe ('), see the example in item #1.

11. Self-explanatory.

12. Use the LOCAL HIGH SCHOOL code numbers on the attached Code Sheet. If the code for your high school does not appear, write the high school Name, City, and State in the spaces provided.

13. Mark the item which describes your HIGH SCHOOL EDUCATION at the beginning of the semester for which you are applying.

14. STUDENT CLASSIFICATION definitions (white section -- mark one):
    (1) New student - first-time college attendance.
    (2) New transfer - you have attended another college; this will be your first semester at Sierra College.
    (3) Returning transfer - returning to Sierra College after attending another college.
    (4) Returning - returning to Sierra College; no other college attended since.

    STUDENT CLASSIFICATION definitions (green section -- mark those that apply):
    (1) You will be attending part-time (6 units or less).
    (2) You have attended college(s) other than Sierra College, have not received a baccalaureate or higher degree, and will be enrolling in 7 or more units.
    (3) You will not be 18 years of age when school begins but will be a high school graduate.
    (4) You will be a high school student enrolling in college courses simultaneously.

15. Mark one item which best describes your present EDUCATIONAL GOAL.

16. Use the MAJOR codes on the attached Code Sheet. If the code for your major does not appear, select either General Education (two-year) or Liberal Arts (four-year).

17, 18. Use the appropriate COLLEGE OR UNIVERSITY codes from the attached Code Sheet. If the code for your college does not appear, write the college Name, City, and State in the spaces provided. Leave blank if Sierra College was the last college you attended.

19, 20. Self-explanatory.

BEST COPY AVAILABLE

APPLICATION FOR ADMISSION

1\.

NAME – Last, First, Middle Initial (Separate names with commas)

A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
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ADMISSION INFORMATION

2. Semester and year for which you are applying, mark one semester only

YEAR 19		
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FALL ○		2
SPRING ○		3
SUMMER ○		4
		5
		6
		7
	8	8
	9	9

3. Semester and year you last attended Sierra College and were enrolled in credit courses

YEAR 19		
	0	0
	1	1
FALL ○	2	2
SPRING ○	3	3
SUMMER ○	4	4
	5	5
	6	6
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4. SOCIAL SECURITY NUMBER

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7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9

STUDENT STATEMENT

I understand that all requirements must be on file by the deadline established for each semester and certify under penalty of perjury that the information given on this form is true and correct. I understand that failure to report changes in status can result in dismissal from college.

Signed ____________________

Date ____________________

Sierra College
5000 Rocklin Rd.
Rocklin, Ca. 95677
(916) 624-3333

5 MAILING ADDRESS

Number and street (separate each with a space) or P.O. Box
Continue city and state on page 3

A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
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6. DATE OF BIRTH

MONTH	DAY			YEAR	
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Mar	2	2		2	2
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May		4		4	4
Jun		5		5	5
Jul		6		6	6
Aug		7		7	7
Sep		8		8	8
Oct		9		9	9
Nov					
Dec					

SEX MALE ☐
FEMALE ☐

BIRTHPLACE

State or foreign country-see example on instruction sheet

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U S CITIZEN?
YES ☐
NO ☐

7. HOME TELEPHONE NUMBER

AREA CODE									
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PRINT NAME HERE ______________ 3.

MAILING ADDRESS - Continued

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STATE

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4	4
5	5
6	6
7	7
8	8
9	9

COUNTRY

0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

Use codes on attached sheet

CALIFORNIA = 05 UNITED STATES = 000

ZIP CODE

0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

8. WORK TELEPHONE NUMBER

AREA CODE

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

9. EMERGENCY TELEPHONE NUMBER

AREA CODE

0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9

10. PREVIOUS LAST NAME (If you attended Sierra College previously under a last name different from that on page 1, mark that previous last name below.)

A	A	A	A	A	A	A	A	A	A	A	A	A
B	B	B	B	B	B	B	B	B	B	B	B	B
C	C	C	C	C	C	C	C	C	C	C	C	C
D	D	D	D	D	D	D	D	D	D	D	D	D
E	E	E	E	E	E	E	E	E	E	E	E	E
F	F	F	F	F	F	F	F	F	F	F	F	F
G	G	G	G	G	G	G	G	G	G	G	G	G
H	H	H	H	H	H	H	H	H	H	H	H	H
I	I	I	I	I	I	I	I	I	I	I	I	I
J	J	J	J	J	J	J	J	J	J	J	J	J
K	K	K	K	K	K	K	K	K	K	K	K	K
L	L	L	L	L	L	L	L	L	L	L	L	L
M	M	M	M	M	M	M	M	M	M	M	M	M
N	N	N	N	N	N	N	N	N	N	N	N	N
O	O	O	O	O	O	O	O	O	O	O	O	O
P	P	P	P	P	P	P	P	P	P	P	P	P
Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
R	R	R	R	R	R	R	R	R	R	R	R	R
S	S	S	S	S	S	S	S	S	S	S	S	S
T	T	T	T	T	T	T	T	T	T	T	T	T
U	U	U	U	U	U	U	U	U	U	U	U	U
V	V	V	V	V	V	V	V	V	V	V	V	V
W	W	W	W	W	W	W	W	W	W	W	W	W
X	X	X	X	X	X	X	X	X	X	X	X	X
Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
○	○	○	○	○	○	○	○	○	○	○	○	○

4.

11 HIGH SCHOOL GRADUATION

Mark your date of graduation from high school or date of last attendance

MONTH		YEAR	
Jan	19		
Feb			
Mar		0	0
Apr		1	1
May		2	2
Jun		3	3
Jul		4	4
Aug		5	5
Sep		6	6
Oct		7	7
Nov		8	8
Dec		9	9

12 LAST HIGH SCHOOL ATTENDED (Use codes on attached sheet)

0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

NAME ______________________

CITY ______________________

STATE

13. HIGH SCHOOL EDUCATION (Status at beginning of the semester for which you are applying)

High school diploma	1
G E D	2
Certificate of equivalency	3
Certificate of California high school proficiency exam	4
Certificate of completion	5
Foreign secondary school diploma or cert. of graduation	6
Not a high school graduate	7

14. STUDENT CLASSIFICATION

Mark one: (See instruction sheet)	
New student	1
New transfer	2
Returning transfer	3
Returning	4
Mark those that apply:	
6 units or less (part time)	1
7 units or more (attended another college/no BA or higher	2
High school graduate under 18 years of age	3
Current high school student	4

15. EDUCATIONAL GOAL AT SIERRA

Transfer without AA/AS degree	1
Transfer with AA/AS degree	2
Earn AA/AS vocational degree	3
Earn AA/AS general educ. degree	4
Earn certificate	5
Upgrade job skills	6
Take courses for recreational/personal enrichment	7
Other	8
TIME REQUIRED TO COMPLETE YOUR EDUCATIONAL GOAL AT SIERRA COLLEGE	
One semester or less	1
More than one semester	2

16. PROPOSED MAJOR (Use codes on attached sheet)

0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	[illegible]

17. LAST COLLEGE ATTENDED (Use codes on attached sheet. do not include Sierra College)

0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

NAME ______________________

CITY ______________________

STATE

DEGREE EARNED

AA AS	1
Bachelor degree or higher	2

18. TRANSFER COLLEGE (Use codes on attached sheet)

0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

NAME ______________________

CITY ______________________

STATE

DO YOU WISH INFORMATION ON THE FOLLOWING?

Campus Housing	1
Financial Assistance	2
Veterans	3

19. ETHNIC SURVEY (Mark one)

American Indian/Alaskan	1
Asian/Pacific Islander	2
Black/Negro	3
White/Caucasian	4
Hispanic/Spanish Surname	5
Filipino	6
Other	7

20. VETERAN STATUS

Not a veteran	1
Veteran not receiving benefits	2
Veteran receiving benefits	3
Veteran dependent receiving benefits	4

MAJORS CONTINUED

SIERRA COLLEGE

CODE SHEET

CERTIFICATE PROGRAMS Application Item ⑯

0502001	Accounting
0112101	Agri Business
0100001	Agriculture - General
0100501	Agriculture - Suburban
0102101	Animal Husbandry
0948011	Auto Tech - Alignment & Brake
0948021	Auto Tech - Counterman
0948031	Auto Tech - Engine
0948041	Auto Tech - Manufacturers Sales
0948051	Auto Tech - Master Auto Technician
0948061	Auto Tech - Power Train
0948071	Auto Tech - Tune Up
0504101	Banking & Finance - Bank Operations
0504401	Banking & Finance - Credit & Lending
0514501	Clerical
0952121	Construction Tech - Building Construction Merchandising
0952511	Construction Tech - Cabinet Making
0952101	Construction Tech - Carpentry
0952131	Construction Tech - Management
0952501	Construction Tech - Mill Cabinet
0952111	Construction Tech - Residential Building Construction
0102401	Crops & Soils
0953101	Drafting Tech - Building Construction Engineering Drafter
0953201	Drafting Tech - Civil Topographic Engineering Drafter
0953401	Drafting Tech - Electronic Engineering Drafter
0953001	Drafting Tech - General Engineering Drafter
0953011	Drafting Tech - Master Engineering Drafter
0953151	Drafting Tech - Solar Design Technician
2107101	Early Childhood Instruction
2107151	Early Childhood Supervision
0934011	Electronic Tech - Communications Technician
0934021	Electronic Tech - Digital Technician
0934041	Electronic Tech - General Electronic Technician
0934031	Electronic Tech - Microwave Technician
0934061	Electronic Tech - Optoelectronic Technician
0945511	Energy Management Technician
0114001	Forest Tech
0102141	Horse Husbandry
0109001	Landscaping & Horticulture
0506001	Management
0509001	Marketing
0956301	Metals Tech - Machinist
0956501	Metals Tech - Welding
1203201	Nursing - Vocational
0947411	Railroad Equipment Maintenance - Electrical
0947421	Railroad Equipment Maintenance - Machinist
0947431	Railroad Equipment Maintenance - Sheet Metal
0511001	Real Estate
0514001	Secretarial
2107501	Teacher Aid Education

CALIFORNIA STATE UNIVERSITIES AND COLLEGES

Application Items ⑰ ⑱

15 6 250	Bakersfield
04 6 242	Chico
19 6 155	Dominguez Hills
10 6 260	Fresno
30 6 186	Fullerton
01 6 178	Hayward
12 6 450	Humboldt
19 6 331	Long Beach
19 6 333	Los Angeles
19 6 270	Northridge
19 6 140	Pomona, Polytechnic
34 6 740	Sacramento
36 6 184	San Bernardino
37 6 720	San Diego
13 6 700	San Diego, Calexico
19 6 770	San Fernando Valley
38 6 796	San Francisco
43 6 727	San Jose State
40 6 145	San Luis Obispo, Cal. Polytechnic
49 6 710	Sonoma State
50 6 730	Stanislaus State

UNIVERSITY OF CALIFORNIA

Application Items ⑰ ⑱

01 7 846	Berkeley
57 7 250	Davis
38 7 240	Hastings College of Law
30 7 781	Irvine
19 7 887	Los Angeles
33 7 792	Riverside
37 7 837	San Diego
38 7 876	San Francisco Med. Cntr.
42 7 677	Santa Barbara
44 7 765	Santa Cruz

CALIFORNIA PRIVATE COLLEGES

Application Items ⑰ ⑱

19 8 053	Biola College
34 8 010	The Bryman School
30 8 148	Chapman College
38 8 192	Golden Gate College
34 8 411	Heald Business College
36 8 364	Loma Linda University
19 8 405	Loyola University of Los Angeles
34 8 567	McGeorge College of Law
19 8 518	Occidental College
28 8 620	Pacific Union College
19 8 598	Pepperdine College
19 8 625	Pomona College
43 8 792	Stanford University
09 8 810	Tahoe Paradise College
39 8 840	University of the Pacific
38 8 892	University of San Francisco
43 8 830	University of Santa Clara
19 8 904	University of Southern California
19 8 972	Whittier College

CALIFORNIA COMMUNITY COLLEGES

Application Items ⑰ ⑱

01 5 257	Alameda
42 5 213	Allan Hancock
34 5 023	American River
15 5 050	Bakersfield
04 5 115	Butte
44 5 076	Cabrillo
41 5 062	Canada
19 5 154	Cerritos
01 5 235	Chabot
36 5 210	Chaffey
19 5 177	Citrus
07 5 190	Contra Costa
34 5 124	Cosumnes River
40 5 650	Cuesta
30 5 191	Cypress
43 5 184	De Anza
07 5 208	Diablo Valley
19 5 225	El Camino
43 5 679	Evergreen
32 5 315	Feather River
43 5 227	Foothill
10 5 240	Fresno City
30 5 240	Fullerton
43 5 261	Gavilan
37 5 249	Grossmont
27 5 129	Hartnell
21 5 001	Indian Valleys
01 5 450	Laney
09 5 001	Lake Tahoe
18 5 420	Lassen
19 5 337	Long Beach City
19 5 346	Los Angeles City
19 5 365	Los Angeles Harbor
19 5 954	Los Angeles Mission
19 5 384	Los Angeles Pierce
19 5 396	Los Angeles Valley
07 5 269	Los Medanos
21 5 060	Marin
23 5 001	Mendocino
24 5 475	Merced
01 5 570	Merritt
37 5 509	Mira Costa
50 5 500	Modesto
27 5 270	Monterey Peninsula
56 5 120	Moorpark
19 5 475	Mount San Antonio
33 5 403	Mount San Jacinto
28 5 540	Napa
01 5 610	Ohlone
30 5 525	Orange Coast
56 5 321	Oxnard
37 5 542	Palomar
19 5 575	Pasadena City
12 5 140	Redwoods
19 5 658	Rio Hondo
33 5 687	Riverside City
34 5 740	Sacramento City
30 5 579	Saddleback
36 5 594	San Bernardino
37 5 661	San Diego City
37 5 693	San Diego Mesa
38 5 092	San Francisco City
39 5 670	San Joaquin Delta
43 5 680	San Jose City
41 5 151	San Mateo
30 5 609	Santa Ana
42 5 580	Santa Barbara City
19 5 825	Santa Monica City
49 5 690	Santa Rosa
54 5 071	Sequoias
45 5 695	Shasta
31 5 730	Sierra
47 5 200	Siskiyous
41 5 711	Skyline
48 5 825	Solano
15 5 580	Taft
56 5 741	Ventura
10 5 333	West Hills
43 5 860	West Valley
58 5 925	Yuba

SIERRA COLLEGE

CODE SHEET

UNITED STATES AND POSSESSIONS Application Items ⑤ ⑥ ⑫ ⑰ ⑱

01	Alabama	14	Indiana	27	Nebraska	40	South Carolina
02	Alaska	15	Iowa	28	Nevada	41	South Dakota
03	Arizona	16	Kansas	29	New Hampshire	42	Tennessee
04	Arkansas	17	Kentucky	30	New Jersey	43	Texas
05	California	18	Louisiana	31	New Mexico	44	Utah
06	Colorado	19	Maine	32	New York	45	Vermont
07	Connecticut	20	Maryland	33	North Carolina	46	Virginia
08	Delaware	21	Massachusetts	34	North Dakota	47	Washington
09	Florida	22	Michigan	35	Ohio	48	West Virginia
10	Georgia	23	Minnesota	36	Oklahoma	49	Wisconsin
11	Hawaii	24	Mississippi	37	Oregon	50	Wyoming
12	Idaho	25	Missouri	38	Pennsylvania	51	District of Columbia
13	Illinois	26	Montana	39	Rhode Island		

POSSESSIONS

61	American Samoa
65	Guam
69	Midway Islands
77	Panama Canal Zone
81	Puerto Rico
85	Trust Territory of the Pacific
89	Virgin Islands
93	Wake Island

FOREIGN COUNTRIES Application Items ⑤ ⑥ ⑫ ⑰ ⑱

800008	Afghanistan	800196	Dominican Republic	800368	Japan	800568	Philippines
800012	Albania	800624	East Malaysia	800372	Jordan	800580	Portugal
800016	Algeria	800200	Ecuador	800380	Kenya	800628	Saudi Arabia
800028	Argentina	800204	El Salvador	800388	Korea, Republic of South	800632	Scotland
800032	Australia	800208	England	800392	Kuwait	800636	Senegal
800036	Austria	800222	Ethiopia	800396	Laos	800644	Sierra Leone
800064	Belgium	800228	Fiji Islands	800404	Lebanon	800672	Spain
800068	Bermuda	800232	Finland	800412	Liberia	800692	Sweden
800076	Bolivia	800236	France	800416	Libya	800696	Switzerland
800082	Brazil	800256	Gambia	800420	Lichtenstein	800700	Syria
800084	British Honduras	800264	Germany, Federal - Republic of West	800428	Luxembourg	800704	Tanganyika
800088	British West Indies	800268	Ghana - Gold Coast	800440	Malaya	800706	Tanzania
800102	Burma	800280	Great Britain	800801	Marshall Islands	800708	Thailand - Siam
800108	Cambodia	800284	Greece	800472	Mexico	800710	Tibet
800116	Canada	800288	Greenland	800810	Micronesia	800720	Trinidad - Tobago
800132	Ceylon	800296	Guatemala	800476	Monaco	800740	Uganda
800144	Chile	800308	Haiti	800500	Netherlands	800744	Union of Soviet Socialist Republics - Russia
800152	China, Republic of - Formosa Taiwan	800312	Honduras	800512	New Guinea, Trust Territory of Northeast	800748	United Arab Republic Egypt
800156	Columbia	800320	Hungary	800520	New Zealand	800760	Uruguay
800164	Congo, Republic of Brazzaville	800324	Iceland	800524	Nicaragua	800766	Venezuela
800168	Congo, Democratic Republic of Leopold	800328	India	800512	Nigeria	800772	Vietnam, Republic of South
800172	Costa Rica	800332	Indonesia	800540	Northern Ireland	800776	Wales
800176	Cuba	800336	Iran	800544	Norway	800444	West Malaysia
800180	Cyprus	800340	Iraq	800548	Pakistan	800784	Western Samoa
800184	Czechoslovakia	800344	Ireland - Eire	800552	Panama	800796	Yugoslavia
800192	Denmark	800352	Israel	800560	Paraguay	800798	Zambia
		800356	Italy	800564	Peru		
		800364	Jamaica				

LOCAL HIGH SCHOOLS Application Item ⑫

31 3 030	Adelante	31 3 245	Del Oro	34 3 379	Grant Union	29 3 550	Nevada Union	31 3 640	Roseville
34 3 040	Bella Vista	34 3 231	El Camino (Sacto)	34 3 437	Highlands(No Highlands)	34 3 619	Norte Del Rio	34 3 755	Sacramento
34 3 111	Casa Robles	09 3 275	El Dorado	34 3 409	La Sierra	31 3 001	North Tahoe	34 3 850	San Juan
31 3 168	Chana	29 3 250	Empire	31 3 465	Lincoln	31 3 590	Oakmont	09 3 780	South Tahoe
31 3 165	Colfax	34 3 283	Encina	46 3 425	Loyalton	31 3 570	Placer	31 3 850	Tahoe Truckee
34 3 154	Cordova	34 3 321	Folsom	58 3 520	Marysville	09 3 640	Ponderosa	57 3 880	Woodland
34 3 205	Del Campo	34 3 326	Foothill	34 3 004	Mesa Verde	29 3 002	Providence	51 3 900	Yuba

MAJORS

TWO-YEAR MAJORS Application Item ⑱

0502002	Accounting	0952132	Construction Tech - Management	0956002	Industrial Technology
2105102	Adm of Justice - Corrections	0952502	Construction Tech - Mill Cabinet	0602002	Journalism - Technical
2105012	Adm of Justice - Courts	0952112	Construction Tech - Residential Building Construction	0109002	Landscaping & Horticulture
2105002	Adm of Justice - Law Enforcement	0953102	Drafting - Building Construction Engineering	0506002	Management
2105302	Adm of Justice - Private Security	0953202	Drafting - Civil Topographic	0509002	Marketing
0102102	Agriculture - Animal Husbandry	0953302	Drafting - Electronic Engineering	0956202	Metals Technology
0102402	Agriculture - Crops & Soils	0953002	Drafting - General Engineering	1914202	Mining
0100002	Agriculture - General	0953152	Drafting - Solar Design Technician	0947402	Railroad Equipment Maintenance
0100502	Agriculture - Suburban	0934002	Electronics	0511002	Real Estate
0948002	Auto Analysis	0945512	Energy Management Tech	1203102	Registered Nursing (Inactive)
0504002	Banking & Finance	0925202	Engineering Tech	0514002	Secretarial
0501002	Business - General	0114002	Forest Technology	0514102	Secretarial - Legal
2107202	Child Development	4930002	General Studies	0514202	Secretarial - Medical
0514502	Clerical	1300002	Homemaking	0957302	Surveying
0700002	Computer Studies			2107502	Teacher Aide
				1601002	Vocational Librarianship
				1203202	Vocational Nursing

FOUR-YEAR MAJORS Application Item ⑱

2105004	Adm of Justice	1007004	Drama	1004004	Music	1209004	Pre-Optometry
0100004	Agriculture	2204004	Economics	1208004	Occupational Therapy	1211004	Pre-Pharmacy
0102104	Animal Husbandry	0901004	Engineering - General	0109004	Ornamental Horticulture	1204154	Pre-Veterinary
2202004	Anthropology	1501004	English	2103004	Parks & Recreation Management	2000004	Psychology
0200004	Architecture	1100004	Foreign Language	1509004	Philosophy	0815254	Recreation
1002004	Art	0114004	Forestry	1900004	Physical Science	2200004	Social Science
0400004	Biological Science	1914004	Geology	1212004	Physical Therapy	2104004	Social Welfare
0500004	Business Administration	1009004	Graphic Arts	1902004	Physics	2208004	Sociology
1905004	Chemistry	2205004	History	0102404	Plant Science	1506004	Speech Debate
2107204	Child Development	1300004	Home Economics	2207004	Political Science	1220004	Speech Pathology
1010004	Cinematography	0602004	Journalism	1204004	Pre-Dental	0801004	Teach - Elementary Secondary
0601004	Communications	1205004	Laboratory Technician	1400004	Pre-Law	0839004	Teach - Industrial Arts
0700004	Computer Science	4901004	Liberal Arts	1206004	Pre-Med	0835004	Teach - Physical Education
1008004	Dance	1700004	Mathematics	1203014	Pre-Nursing	0115124	Wildlife & Game Management

Sierra College # ADMISSIONS APPLICATION **Page 5**

I. STUDENT NAME: ____
(Last) (First) (M.I.)

Please write below all your previous names which are different from your current one:

____

II. A. LEGAL-PERMANENT ADDRESS (DO NOT USE P.O. BOX NUMBERS)

____
(Street Address) (City) (County) (State) (Zip)

Since whate date has the above been your legal address? ____________
(Month) (Year)

If Legal-Permanent Address is for less than one year, give previous addresses to account for at least one year:

City, State	From Month, Year	To Month, Year

B. In what CALIFORNIA COMMUNITY COLEGE DISTRICT is your LEGAL RESIDENCE? ____________

C. Address shown on your last federal income tax form (W-2) or that of your parents if you are claimed as a dependent:

____
(Street Address) (City) (State) (Year Filed)

D. Where are you registered to vote? ______________________________
(State) (Since When?) (Year Last Voted)

E. In what state do you hold a valid Driver's License? ____________

Since what date have you held a Driver's License in the above state? ____________
(Month) (Year)

F. In what state is your vehicle licensed? ____________

Since what date has your vehicle been licensed in the above state? ____________
(Month) (Year)

G. If you are not a citizen of the United States, of what country are you a citizen? ____________

Type of Visa ____________ Visa No. ____________ Date Issued ____________

H. Are you a dependent of an active-duty military person stationed in California? Yes_______ No_______

If yes, date of assignment to California: ____________
(Month) (Year)

I. Parent or Guardian's Name (Students under 19 only): ______________________________

____
(Street Address) (City) (State) (Zip)

Does your Parent or Guardian contribute to your support? Yes_______ No_______

III. Please list ALL COLLEGES, UNIVERSITIES AND SUMMER SESSIONS at which you have enrolled in chronological order. Include Sierra College if you have attended here previously.

COLLEGE	City	State	DATES OF ATTENDANCE From	To

SELECTED BIBLIOGRAPHY

SELECTED BIBLIOGRAPHY

Aarons, Howell. "An Evaluation of an Individualized Interpersonal and Interdisciplinary Team Approach to Remediation at Mohegan Community College." Ed.D. Research Project, Nova University, 1975.

Adams, Glenn A. "Preventative Career Counseling--Proving That It Works." Journal of College Placement 34 (Spring 1974):26-33.

Alfred, Richard L. "A Conceptual Investigation of Student Attrition in the Comprehensive Community College." Paper presented at the annual convention of the AERA, Chicago, April 1974.

American Council on Education, Committee on Student Personnel Work, The Student Personnel Point of View, Rev. ed., by E. G. Williamson, Chairman. American Council on Education Studies, Series 6, No. 13. Washington, D.C.: American Council on Education, 1949.

American Council on Education. The Student Personnel Point of View. American Council on Education Studies, Series, 1, Vol. 1, No. 3. Washington, D.C.: American Council on Education, 1937.

Astin, Alexander W. Preventing Students from Dropping Out. San Francisco: Jossey-Bass, 1975.

Baratta, Mary Kathryne. "Nonpersisting Student Analysis for Fall 1977-Spring 1978." Palos Hills, Ill.: Moraine Valley Community College, 1978; Arlington Va.: ERIC Document ED 156275.

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